Vol. 1007 Number 1

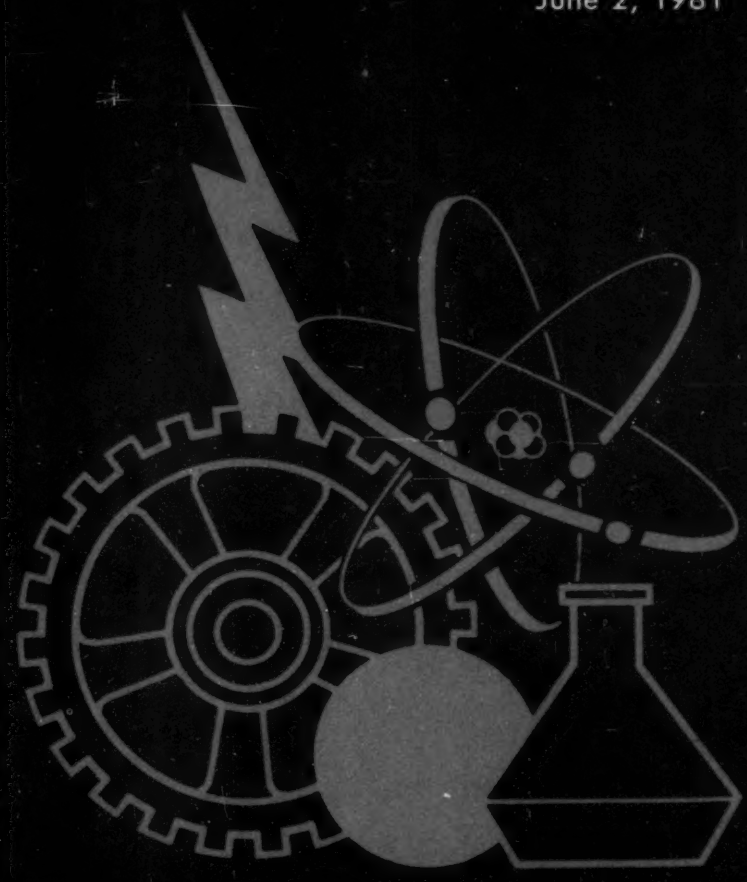
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

June 2, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

June 2, 1981 Volume 1007 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90-95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Board of Appeals Decisions Rendered in the Month of Apr. 1981

Affirmed	207
Affirmed in Part	18
Reversed	65
Total	290

Availability of Patent and Trademark Office Notices on a Subscription Basis

Effective Mar. 3, 1981, a separate publication of a part of the *Official Gazette* entitled *Patent and Trademark Office Notices* is being made available on a subscription basis. This weekly periodical contains all notices which appear in the Patent *Official Gazette* and the Trademark *Official Gazette.* Additionally, current information regarding the general date status of trademark and patent applications will be provided.

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REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,427,691, Re. S.N. 235,024, Filed Feb. 17, 1981, Cl. 24/73R, COUPLING DEVICE, James R. Johnston, Owner of Record: *Inventor,* Attorney or Agent: Elliot A. Salter, et al., Ex. Gp.: 355

3,917,308, Re. S.N. 236,174, Filed Feb. 20, 1981, Cl. 280/661, ARRANGEMENT FOR SETTING THE CAMBER OF A PAIR OF VEHICLES WHEELS, Waldemar Schulz, Owner of Record: *Volkswagenwerk Aktiengesellschaft, Wolfburg, Germany,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 316

4,033,167, Re. S.N. 240,662, Filed Mar. 5, 1981, Cl. 72/367, PROCESS FOR FORMING INTERMEDIATE METAL CONDUIT, Robert A. Philibert, Owner of Record: *General Signal Corp., New York, N.Y.,* Attorney or Agent: Milton A. Kleinman, et al., Ex. Gp.: 321

4,071,393, Re. S.N. 240,550, Filed Mar. 4, 1981, Cl. 156/353, APPARATUS FOR USE IN THE MANUFACTURE OF A WIRING HARNESS, Robert Amphlett, Owner of Record: *Lucas Industries Ltd., Birmingham, England,* Attorney or Agent: John Clarke Holman, et al., Ex. Gp.: 161

4,191,636, Re. S.N. 241,616, Filed Mar. 9, 1981, Cl. 208/110, PROCESS FOR HYDROTREATING HEAVY HYDROCARBON OIL, Yoshio Fukui, et al., Owner of Record: *Chiyoda Chemical Engineering & Construction Co. Ltd., Yokohama-Shi, Japan,* Attorney or Agent: James E. Armstrong, et al., Ex. Gp.: 116

4,227.704, Re. S.N. 236,943, Filed Feb. 23, 1981, Cl. 277/084, SEAL, James G. Blaha, Owner of Record: *Inventor,* Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 241

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

Rules of Practice in Patent Cases; Fee for Filing a Request for Reexamination

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending its rules of practice in patent cases to add a new fee for the filing of a request for reexamination of a patent and to provide for a refund if the request is denied. Public Law 96-517 of Dec. 12, 1980 authorizes reexamination beginning on July 1, 1981. Public Law 96-517 requires a person requesting reexamination to pay a fee established by the Commissioner of Patents and Trademarks. This amendment establishes the fee for filing a request for reexamination and the amount of any refund if the request is denied.

DATES: Effective date: July 1, 1981.

FOR FURTHER INFORMATION CONTACT: Mr. R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This notice changes two rules to add an appropriate fee for requesting reexamination and to refund a portion thereof if reexamination is not ordered. 35 U.S.C. 41(g) requires 60 days notice in the **Federal Register** before a fee can take effect. 35 U.S.C. 41(d) requires that the Commissioner

establish fees for services, such as reexamination, which will recover the estimated average cost to the Office of performing the service.

Background:

A notice of proposed rulemaking relating to the fee, and refund, as well as the procedures for reexamination, was published in the **Federal Register** on Jan. 13, 1981 at 46 FR 3162-3174 and in the Official Gazette on Feb. 17, 1981 at 1003 O.G. 36-47. An oral hearing was held on Apr. 16, 1981. This amendment relates only to section 1.21 on fees and section 1.26 on refunds. It is being issued separately to meet the 60-day notice requirement of 35 U.S.C. 41(g). The reexamination procedures will be the subject of a later amendment. There is no difference in the amount of the fee or refund between the final rule and the proposal.

Discussion of the Background and Major Issues Involved: Two written comments and one oral comment relating to proposed section 1.21(x) indicated that the fee of $1500 seemed excessive. One comment indicated that it should be $65, the amount of the current filing fee for a United States patent application. Several oral comments indicated the amount of the fee was appropriate. In response, it is not considered possible to charge only $65 for a reexamination because 35 U.S.C. 41(d) requires the Commissioner to set the fee for reexamination at a level which will recover the estimated average cost to the Office. The estimated average cost reported to the Congress, and still considered proper, is $1500 per reexamination.

Two written comments and one oral comment referred to proposed section 1.26(c). One written comment proposed the use of a percentage rather than a dollar amount in the rule wording. In response, it is felt that the wording using the actual dollar amount is clearer. Since the amount of the fee is expected to be changed infrequently, changing section 1.26 to follow a change in §1.21 would not be burdensome. One written comment and one oral comment indicated that a fixed fee should be set without any refund in order to simplify processing. Although a fixed fee system would be less complicated, it is felt that persons who have not received a reexamination in response to their request should not be required to pay the same amount as those who had the reexamination requested. No comments were received concerning the amendments to paragraphs (a) and (b) of section 1.26 which reorganize some of the wording and raise the minimum refund without specific demand from ten cents to fifty cents.

Environmental, Energy, and Other Considerations.

The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

Amendment of Regulations

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and 41, Part 1 of Title 37 CFR is amended as set forth below.

1. Section 1.21 is amended by adding a new paragraph (x) to read as follows:

§1.21 Patent and miscellaneous fees and charges

* * * * *

(x) To file a request for reexamination—$1,500.00

2. Section 1.26 is revised to read as follows:

§1.26 Refunds.

(a) Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw his application or to withdraw an appeal, will not entitle a party to demand such a return. Amounts of fifty cents or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over fifty cents but less than one dollar may be returned in postage stamps, and other amounts by check or, if requested, by credit to a deposit account.

(b) Refund of a portion of any international search fee paid to the Patent and Trademark Office may be made where the prior art search made during the subsequent examination of a national application is wholly or partly based on the earlier international search made in the international application for which the search fee was paid. The amount of the refund will be as determined by the examiner according to the value of the prior international search made by the Patent and Trademark Office as an International Searching Authority, as 90 percent, 45 percent, or 0 percent of the international search fee. If the amount of the refund is not a multiple of $5, it will be rounded to the next higher multiple of $5. (Note §1.446 for refund of the search fee in an international application.)

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requestor of the proceeding. Reexamination requestors should indicate whether any refund should be made by check or credit to a deposit account.

RENE D. TEGTMEYER,
Apr. 17, 1981. *Acting Commissioner of Patents and Trademarks.*

Approved:

ROBERT B. ELLERT,
Apr. 20, 1981. *Acting Assistant Secretary for Productivity, Technology and Innovation.*

[*FR Doc. 81-13093 Filed 4-29-81; 8:45 am*]

BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of June 2, 1981

3,774,997	4,235,635	4,246,815	4,255,339
3,928,418	4,235,885	4,246,965	4,255,524
4,060,883	4,235,931	4,247,452	4,255,630
4,076,600	4,236,150	4,247,829	4,255,807
4,154,528	4,236,182	4,248,862	4,256,009
4,162,153	4,236,599	4,249,147	4,256,015
4,170,435	4,237,316	4,249,980	4,256,028
4,173,870	4,237,394	4,250,470	4,256,052
4,174,489	4,237,733	4,250,482	4,256,149
4,188,357	4,237,899	4,250,594	4,256,186
4,207,523	4,238,606	4,250,816	4,256,196
4,208,516	4,239,326	4,251,415	4,256,216
4,212,423	4,239,913	4,252,462	4,256,472
4,212,804	4,239,921	4,252,525	4,256,648
4,212,989	4,241,066	4,252,733	4,256,667
4,215,107	4,241,592	4,253,088	4,256,703
4,215,353	4,242,259	4,253,221	4,256,729
4,216,157	4,242,642	4,253,244	4,256,733
4,217,469	4,242,650	4,253,261	4,256,745
4,217,579	4,242,864	4,253,539	4,256,767
4,220,680	4,242,975	4,253,641	4,256,781
4,222,581	4,242,986	4,253,683	4,256,836
4,222,963	4,243,232	4,254,008	4,256,953
4,223,751	4,243,933	4,254,091	4,257,110
4,224,239	4,244,376	4,254,303	4,257,119
4,224,657	4,244,406	4,254,382	4,257,141
4,225,018	4,244,767	4,254,399	4,257,155
4,227,433	4,244,796	4,254,453	4,257,230
4,227,837	4,245,688	4,254,462	4,257,304
4,229,817	4,245,752	4,254,473	4,257,336
4,230,039	4,245,882	4,254,501	4,257,585
4,231,979	4,245,967	4,254,544	4,257,768
4,232,384	4,246,104	4,254,585	4,257,786
4,233,136	4,246,271	4,254,690	4,257,809
4,233,565	4,246,281	4,254,699	4,257,858
4,233,619	4,246,308	4,254,984	4,257,939
4,234,071	4,246,627	4,254,987	4,257,964
4,234,312	4,246,688	4,255,229	4,258,381
4,235,316			

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,433,825, P. R. A. Maltha, S. B. Tijssen ESTERS OF 4,4-DITERT. BUTYLPEROXYPENTANOIC ACID Interference No. 100,305, decided Feb. 10, 1981, Claim 1.

Patent No. 3,484,237, M. D. Shattuck, U. Vahtra, ORANIC PHOTOCONDUCTIVE COMPOSITIONS AND THEIR USE IN ELECTROPHOTOGRAPHIC PROCESSES, Interference No. 98,047 decided Jan. 16, 1981, claim 1.

Patent No. 3,714,066, T. M. King, H. L. Vandersall, METHODS INHIBITING CORROSION WITH ETHANE DIPHOSPHONATE COMPOSITIONS, Interference No. 99,968, decided Dec. 11, 1980, claims 1, 2 and 3.

Patent No. 3,733,270, A. F. Kerst, METHODS OF SCALE INHIBITION, Interference No. 99,969, decided Dec. 11, 1980, claim 3.

Patent No. 3,905,923, J. H. Klug, POLY (UREA-URETHANE) FOAMS CONTAINING IMMOBILIZED ACTIVE ENZYMES, Interference No. 99,716, decided Feb. 13, 1981, claims 1-5.

Patent No. 3,953,964, P. Suppa, A. E. Willis, SINGLE SWITCH ARRANGEMENT FOR ADJUSTING THE TIME BEING DISPLAYED BY A TIMEPIECE, Interference No. 99,823, decided Dec. 17, 1980, claim 1.

Patent No. 4,038,442, T. Utumi, METHOD FOR COATING, Interference No. 100,508, decided Feb. 5, 1981, claims 1-3.

Patent No. 4,046,950, L. C. Isett, CHALCOGENATED TETRACENE ORGANIC METALS, Interference No. 99,986, decided Feb. 18, 1981, claims 1-11, 13, 14, 16–18 and 20.

Patent No. 4,098,744, R. A. Allen, L. W. Scott, CURABLE WATER-BORNE EPOXY RESIN COATING COMPOSITIONS, Interference No. 100,314, decided Feb. 27, 1981, claims 1-12.

Patent No. 4,104,782, S. J. Veeck, W. R. Freeman, L. E. Dardi, METHOD FOR CONSOLIDATING PRECISION SHAPES Interference No. 100,529, decided Mar. 20, 1981 Claims 1, 3-7.

Patent No. 4,125,712, U.F. Axen, CENTAIN 5,6-DIHYDROPROSTACYCLIN ANALOGS, Interference No. 100,364, decided Mar. 26, 1981, claims 57-93.

Patent No. 4,141,431, G. C. Baird, DETERMINATION OF FIRING TIMES OF ACOUSTIC PULSES, Interference No. 100,327, decided Mar. 18, 1981, claims 1, 2, 5 and 7.

Patent No. 4,147,819, Y. Hukumoto, H. Kashiwadani, S. Hiramatsu, METHOD FOR FORMING POLYPHENYLENE SULFIDE RESIN COATING ON THE SURFACE OF METAL SUBSTRATE, Interference No. 100,310, decided Mar. 27, 1981, claims 1-4.

Patent No. 4,155,912, M. Menard, G. Caron, 2-METHYL-PENEM-3-CARBOXYLIC ACID ANTIBIOTICS, Interference No. 100,502 decided Feb. 9, 1981, claims 1-17.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG
Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6-140,646. A Flowing Gas Discharge Source of Vacuum Ultraviolet Line Radiation System. Filed Apr. 16, 1980.

Patent application 6-186,109. Phase Sensor for R.F. Transmission Lines. Filed Sept. 11, 1980.

Patent application 6-205,361. Line Source Antenna for Electronic Beam Scanning. Filed Nov. 10, 1980.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent application 6-192,406. Dynamic Damping System. Filed Sept. 30, 1980.

Patent Application 6-193,048. Method and Apparatus for Measuring Hand-eye Coordination While Tracking a Changing Size Image. Filed Oct. 2, 1980.

Patent Application 6-195,147. Atmospheric Dispersion Corrector. Filed Oct. 8, 1980.

Patent Application 6-195,693. Flat Workpiece Pickup. Filed Oct. 9, 1980.

Patent 4,238,197. Analysis of Lubricating Oils for Iron Content. Filed Apr. 12, 1979. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,238,602. Fluorine Containing Polyethers. Filed Apr. 26, 1979. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,238,716. Miniature Vehicle Dispenser Spin-up Speed Control System. Filed Sept. 27, 1978. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,238,747. Mode Filtering Apparatus. Filed Aug. 10, 1979. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,238,772. Image Enhancement Using On-Line Spatial Filtering. Filed Aug. 3, 1979. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,238,827. Interferogram Synthesization Method and Apparatus. Filed Nov. 20, 1978. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,239,053. Fuel Flow Distribution System. Filed Feb. 7, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,239,392. Grating Output Wavefront Sampling System. Filed July 7, 1978. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,241,223. F-Phenylalkylene Oxide Diacetylenes. Filed Aug. 28, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,242,179. Method of Fabricating Cadmium Electrodes. Filed July 27, 1979. Patented Dec. 30, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6-210,460. Carriage for Cable Logging System. Filed Nov. 25, 1980.

Patent application 6-219,569. Apparatus for Treatment of Fibers with Ozone-Steam Mixtures. Filed Dec. 22, 1980.

Patent 4,239,701. Ternary Salts of Tris(Aminomethyl)-Phosphines and Their Oxides. Filed July 26, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,245,494. Inlet System for Direct Gas Chromatographic and Combined Gas Chromatographic/Mass Spectrometric Analysis of Food Volatiles. Filed Feb. 26, 1979. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,246,031. Prepolymer Preparation and Polymerization of Flame Retardant Chemicals from THP-Salts. Filed Oct. 11, 1978. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,246,310. High Performance, Lightweight Structual Particleboard. Filed Apr. 6, 1979. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,249,017. Tris(N-Carbalkoxylaminomethyl)-Phosphine Oxides and Sulfides. Filed Nov. 29, 1978. Patented Feb. 3, 1981. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent application 6-210,044. Acoustically Transparent Hydrophone Probe. Filed Nov. 24, 1980.

Patent application 6-221,565. Recombinant DNA Process and Product Utilizing a Papilloma Virus DNA as a Vector. Filed Dec. 31, 1980.

Patent application 6-240,577. Silver Stains for Protein in Gels. Filed Mar. 4, 1981.

Patent 4,247,780. Feedback Controlled Geometry Registration System for Radiographs. Filed June 8, 1979. Patented Jan. 27, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-090,205. Arrestment System. Filed Nov. 1, 1979.

Patent application 6-189,401. A Method and Apparatus for Measuring Optical Coupling Coefficients. Filed Sept. 19, 1980.

Patent application 6-199,895. Laser Bottlenecking Technique. Filed Oct. 23, 1980.

Patent application 6-203,003. Light Burst Activity Analyzer. Filed Nov. 3, 1980.

Patent application 6-203,197. Balanced Impedance Coupler. Filed Nov. 4, 1980.

Patent application 6-206,130. Multi-Sampling-Channel Pulse Compressor. Filed Nov. 6, 1980.

Patent application 6-206,404. Method for Cation Production. Filed Nov. 13, 1980.

Patent application 6-208,355. Multiple-Microcomputer Processing. Filed Nov. 19, 1980.

Patent application 6-208,757. Recoil Force and Weight Loss Simulation Device. Filed Nov. 20, 1980.

Patent application 6-210,114. Pressure Formed Fiber Optic Connector. Filed Nov. 24, 1980.

Patent application 6-210,981. Improved Method of Preparing N, N-Bis(2-Fluoro-2,2-Dinitroethyl) Carbamyl Chloride and Its Derivatives. Filed Nov. 28, 1980.

Patent application 6-213,529. High Speed Digital to Analog Converter Circuit. Filed Dec. 5, 1980.

Patent application 6-215,213. Rotating Shutter System for Improving the Resolution of a Visual Display System. Filed Dec. 11, 1980.

Patent 4,230,995. Electrically Excited Mercury Halide Laser. Filed Oct. 24, 1978. Patented Oct. 28, 1980. Not available NTIS.

Patent 4,231,058. Tungsten-Titanium-Chromium/-Gold Semiconductor Metallization. Filed Nov. 22, 1978. Patented Oct. 28, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent 4,209,561. Structural Wood Panels with Improved Fire Resistance. Filed July 28, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,212,297. Micro-Fluid Exchange Coupling Apparatus. Filed Oct. 16, 1978. Patented July 15, 1980. Not available NTIS.

Patent 4,218,685. Coaxial Phased Array Antenna. Filed Oct. 17, 1978. Patented Aug. 19, 1980. Not available NTIS.

Patent 4,218,892. Low Cost Cryostat. Filed Mar. 29, 1979. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,218,941. Method and Tool for Machining a Transverse Slot About a Bore. Filed Oct. 17, 1978. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,219,027. Subcutaneous Electrode Structure. Filed Jan. 16, 1979. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,219,084. Fire Extinguishing Apparatus Having a Slidable Mass for a Penetrator Nozzle. Filed Apr. 19, 1978. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,219,926. Method and Apparatus for Fabricating Improved Solar Cell Modules. Filed Feb. 23, 1979. Patented Sept. 2, 1980. Not available NTIS.

Patent 4,222,098. Base Drive for Paralleled Inverter Systems. Filed Feb. 16, 1978. Patented Sept. 9, 1980. Not available NTIS.

Patent 4,225,372. Surface Finishing. Filed Jan. 25, 1979. Patented Sept. 30, 1980. Not available NTIS.

Patent 4,228,422. System for a Displaying at a Remote Station Data Generated at a Central Station and for Powering the Remote Station from the Central Station. Filed Nov. 30, 1978. Patented Oct. 14, 1980. Not available NTIS.

Patent 4,228,656. Power Control for Hot Gas Engines. Filed May 19, 1978. Patented Oct. 21, 1980. Not available NTIS.

Patent 4,229,196. Atomic Hydrogen Storage Method and Apparatus. Filed Feb. 6, 1979. Patented Oct. 21, 1980. Not available NTIS.

Patent 4,229,473. Partial Interlaminar Separation System for Composites. Filed Mar. 24, 1978. Patented Oct. 21, 1980. Not available NTIS.

Patent 4,230,717. Indometh Acin-Antihistamine Combination for Gastric Ulceration Control. Filed Dec. 29, 1978. Patented Oct. 28, 1980. Not available NTIS.

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Patent 4,234,971. Precise RF Timing Signal Distribution to Remote Stations. Filed Sept. 24, 1979. Patented Nov. 18, 1980. Not available NTIS.

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Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

3,087,663, James K. Anderson, APPARATUS FOR ADJUSTING PRINTING WEB TENSION, **filed** Dec. 28, 1979, D.C., S.D. Ohio (Dayton), Doc. C-3-79-445, *James K. Anderson* v. *Harris Corp.* Dismissal with prejudice filed Feb. 17, 1981.

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3,316,744, ETC Inc., IMPACT CRIMPING TOOL, **filed** Mar. 6, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-381, *ETC Inc.* v. *Bilfro Corp., et al.*

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3,636,479, Microwave Associates, Inc., MICROWAVE STRIP TRANSMISSION LINE CIRCULATOR; **3,673,518, same,** STUB TUNED CIRCULATOR, **filed** Aug. 28, 1980, U.S. Court of Claims (Washington, D.C.), Doc. 459-80C, *Microwave Associates, Inc.* v. *The United States.*

3,673,518. **(See 3,636,479.)**

3,728,753. **(See 3,579,696.)**

3,775,788. **(See 3,296,636.)**

3,803,658, Johann N. Raubenheimer, CLEANING DEVICES, **filed** Feb. 12, 1981, D.C., S.D. Fla. (Miami), Doc. 81-303-CIV-EBD, *Baracuda International Corp.*, v. *F.N.D. Enterprises, Inc.*

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3,869,731, The Regents of the University of California, ARTICULATED TWO-PART PROSTHESIS REPLACING THE KNEE JOINT, **filed** Aug. 22, 1975, D.C. Md. (Baltimore), Doc. H-75-1174, *The Regents of the University of Calif., et al.* v. *Howmedica, Inc.* Judgment **filed** Mar. 12, 1981.

3,885,062, E/M Lubricants, Inc. , PROCESS FOR TREATING MOLDS USED IN MOLDING GLASS PARTS; **3,977,885, same,** GLASS MANUFACTURING COMPOSITION, **filed** Mar. 16, 1981, D.C., S.D. Ind. (Terre Haute), Doc. TH 81-47-C, *Glass Lubricants Corp.* v. *E/M Lubricants, Inc., et al.*

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3,977,885. (See 3,885,062.)

3,978,777, Econovent Systems, Inc., VENTILATING APPARATUS; **4,047,519, same; 4,153,044, same,** BACK-SHELF VENTILATING HOOD, **filed** Mar. 18, 1981, D.C., S.D. Ohio (Cincinnati), Doc. C-1-81-334, *Econovent Systems, Inc.* v. *Feldkamp Sheet Metal, Inc., et al.*

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3,995,443, Rudolf Iversen, AIR CONDITIONING SYSTEM, **filed** Aug. 15, 1980, D.C.N.J. (Newark), Doc. 80-2652, *Rudolf Iversen* v. *Prudential Insurance Co. of America.* Action dismissed on Nov. 3, 1980. **Same, filed** Mar. 9, 1981, D.C. Colo. (Denver), Doc. 81-C-306, *Rudolf Iversen* v. *Natkin Service Co.*

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4,047,519. (See 3,978,777.)

4,056,884. (See 3,909,767.)

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4,130,920, Siarto Machine & Tool Co., Inc., MACHINE TOOL; **4,200,182, same,** METHOD OF MACHINING; **4,209,088, same,** MACHINE TOOL, **filed** Feb. 24, 1981, D.C., E.D. Mich. (Detroit), Doc. 81-70586, *Ringtransfer, Inc.* v. *Siarto Machine & Tool Co., Inc., et al.*

4,131,284, Zerostat Components, Ltd., DAMPER MEANS FOR DAMPING THE RESONANCE OF DISC RECORD TONE ARMS, **filed** Mar. 27, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 1505, *Zerostat Components, Ltd.* v. *Shure Brothers, Inc.*

4,131,869. (See 3,909,767.)

4,146,072. (See 4,009,632.)

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4,152,974, National Presto Industries, Inc., HOT AIR CORN POPPER, **filed** Dec, 17, 1980, D.C. Minn. (St. Paul), Doc. 3-80-671, *National Presto Industries, Inc.* v. *Holiday Station Stores, Inc., et al.*

4,153,044. (See 3,978,777.)

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4,159,096, General Foam Plastics Corp., SUPER STABLE, SIMPLY ASSEMBLEABLE TREE STAND, **filed** Nov. 4, 1980, D.C., E.D. Va. (Norfolk), Doc. 80-1196-N, *General Foam Plastics Corp.* v. *Leggett's Department Store, Inc.*

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4,178,043. (See 3,174,803.)

4,188,189, University Patents, Inc., QUANTITATIVE TESTING FOR VITAMIN B12, **filed** Mar. 16, 1981, D.C. Colo. (Denver), Doc. 81-A-341, *University Patents, Inc.* v. *Colorado Pathologists Regional Laboratory, Inc.*

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4,231,173, ESCO Corp., EXCAVATING TOOTH, **filed** Mar. 11, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-0399 C, *ESCO Corp.* v. *G. H. Hensley Industries, Inc.*

4,235,158, Wayne Automation Corp., METHOD OF MAKING HIGH STRENGTH SHIPPING CARTON; **4,235,159, same,** MACHINE FOR MANUFACTURE OF HIGH STRENGTH SHIPPING CARTONS, **filed** Dec. 16, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80 5626, *Crown Zellerbach Corp.* v. *Wayne Automation Corp.*

4,235,159. (See 4,235,158.)

D. 233,135, Irvin W. Combs, Jr., SHIPPING CARTON FOR CONTAINER OR THE LIKE, **filed** Nov. 4, 1980, D.C., W.D. Tenn. (Memphis), Doc. C-80-2618-W, *Irvin W. Combs, Jr.* v. *Plough, Inc., et al.* Judgment

granted for defendant on Mar. 25, 1981.

D. 245,644, Transamerica Corp., FONT OR TYPE, **filed** June 3, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80 02374, *Transamerica Corp.* v. *George E. McCalling, doing business as Transamerica Realtors.*

D. 249,754, Schweiger Industries, Inc., CHAIR OR SIMILAR ARTICLE, **filed** Oct. 4, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78-C-638, *Schweiger Industries, Inc.* v. *Sears, Roebuck and Co.* Agreed order of dismissal filed Sept. 23, 1980.

D. 258,100, Pacific Furniture Manufacturing Co., DESIGN FOR AN ARMCHAIR; **D. 258,101, same, filed** Mar. 12, 1981, D.C., M.D.N.C. (Greensboro), Doc. C-81-111-G, *Pacific Furniture Manufacturing Co.* v. *Preview Furniture Corp.*

D. 258,101. **(See D. 258,100.)**

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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 2, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-07-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-07-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-03-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-17-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-13-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-17-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	3-26-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-11-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	12-03-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-05-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Number 3,131,397 to 3,134,980, inclusive

Plant Patents ..... Numbers 2,399 to 2,406, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JUNE 2, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,701

IN-MOLD COATING COMPOSITIONS CONTAINING NON-FUNCTIONAL LIQUID COPOLYMERS AND FREE ISOCYANATE CONTAINING COMPOUNDS

Erich Kuehn, Wilmington, Del., assignor to ICI Americas Inc.

Filed Sep. 17, 1980, Ser. No. 188,123

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—422.8

No Drawing. 33 Pages Specification

Fully cured reinforced molded resins such as polyester, polyurea urethane, polyurea, polyurethane, polyisocyanurate, polyepoxy and polycarbonate resins can be in-mold coated to cover surface defects such as sink marks and microcracks with an improved coating composition comprising 5–94% by weight of an ethylenically unsaturated base resin free of groups reactive with isocyanate radicals; 5–94% by weight of an ethylenically unsaturated monomer free of groups reactive with isocyanate radicals and 1–20% by weight of isocyanate containing compounds or compounds which decompose to form free isocyanate containing compounds. Such coatings unexpectedly have improved adherence to molded articles over similar compositions which contain no free isocyanate. Such coatings exhibit excellent adhesion and when subjected to the standard adhesion test ASTM D3359-74 are graded from 3–5 and when subjected to the GM"X" adhesion test are graded from 8 through 10.

Typical formulations consist of 35% vinyl terminated polyester urethane resins, vinyl terminated polyisocyanurate resins, and vinyl terminated polyester resins all of which are free of groups reactive with isocyanate radical; 45% styrene; and 2–5% polyphenyl methane polyisocyanate having 2.7—NCO groups per molecule with minor amounts of emulsifiers, fillers, catalysts, cross-linking agents, dryers and pigments. Such coatings when containing electroconductive fillers can be painted by standard electrostatic paint techniques.

REISSUES

JUNE 2, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,629

GAS TURBINE ENGINE

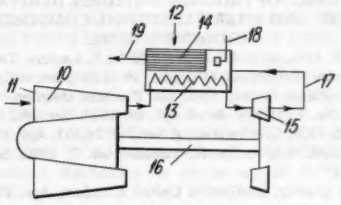
Lindsay G. Dawson, Loughborough, England, assignor to Rolls-Royce Limited, London, England

Original No. 4,062,190, dated Dec. 13, 1977, Ser. No. 557,838, Mar. 12, 1975. Application for reissue Oct. 6, 1978, Ser. No. 949,110

Claims priority, application United Kingdom, Mar. 26, 1974, 13230/74

Int. Cl.[3] **F02C** *1/04, 7/00*

U.S. Cl. 60—682 **14 Claims**



13. An engine system comprising

a heat engine, and

a heat input device for said engine;

said heat input device comprising a heat exchange body having an extended surface adapted for surface burning of a fuel and oxidant mixture;

means for forming a combustible oxidant-fuel mixture in said heat exchange body;

means for surface burning said oxidant-fuel mixture in said heat exchange body to thereby raise the temperature of said extended surface substantially above the temperature of the exhaust gases from the combustion of said fuel-oxidant mixture, and

a heat exchange surface forming at least a portion of said heat exchange body and being in thermal contact with said extended surface, said heat exchange surface being heated by said surface burning of said fuel-oxidant mixture.

Re. 30,630

POWER PLANT SECONDARY COOLANT CIRCUIT

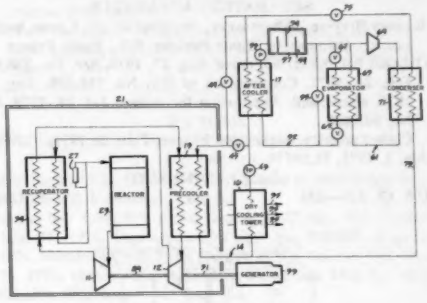
David C. Morse, La Jolla, and Daniel L. Vrable, Del Mar, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Original No. 4,144,723, dated Mar. 20, 1979, Ser. No. 757,450, Jan. 6, 1977. Continuation-in-part of Ser. No. 666,598, Mar. 15, 1976, abandoned. Application for reissue Dec. 12, 1979, Ser. No. 102,957

Int. Cl.[3] **F25B** *25/00, 7/00, 1/00, 1/10*

U.S. Cl. 62—332 **16 Claims**

1. In a power plant having heat removal means in a working fluid circuit, a closed loop primary coolant circuit for circulating a coolant through said heat removal means, said primary coolant circuit including a primary heat exchanger for cooling the coolant therein, a secondary heat exchanger, and adjustable means for selectively directing at least a portion of a primary coolant in said primary coolant circuit through said secondary heat exchanger for further cooling the primary coolant and thereby increasing heat rejection capacity of said



primary heat exchanger and said closed loop primary coolant circuit.

Re. 30,631

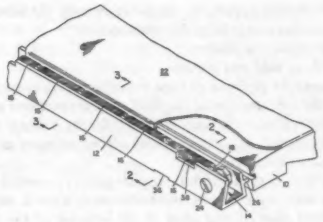
SADDLE LOCK-UP FOR TAB-LESS FLEXIBLE PRINTING PLATES

Charles B. Ruckdeschel, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Original No. 3,896,727, dated Jul. 29, 1975, Ser. No. 446,454, Feb. 27, 1974. Application for reissue Jul. 27, 1976, Ser. No. 709,053

Int. Cl.[3] **B41F** *27/00, 27/06*

U.S. Cl. 101—415.1 **4 Claims**



3. A lock-up for flexible printing plates for mounting on a printing cylinder comprising:

leading edge clamping means to positively grip one end of a flexible printing plate, said leading edge clamping means adapted to mount on the surface of a printing cylinder;

trailing edge clamping means to positively grip and tension the other end of a flexible printing plate, said trailing edge clamping means being adapted to be mounted on the surface of a printing cylinder, said trailing edge clamping means having a transverse channel member being moveably mounted with respect to the surface of a printing cylinder, said channel member having an upwardly facing inverted wedge shaped opening therein;

resilient means contacting said channel member and biasing said channel member to tension a flexible printing plate; and

means mounted within said opening to positively grip a flexible printing plate and to allow lateral adjustment of the printing plate, said means comprising a plurality of transversely spaced sleeves within said opening, said sleeves radially and axially independently mounted with respect to each other and

defining a gap between said sleeves on one side of the inside of said channel member to positively grip the other end of a flexible printing plate in said gap, said sleeves conforming to the thickness of a flexible printing plate independent of each other and allowing lateral movement of the flexible printing plate for purposes of color registration.

Re. 30,632
SEPARATION APPARATUS

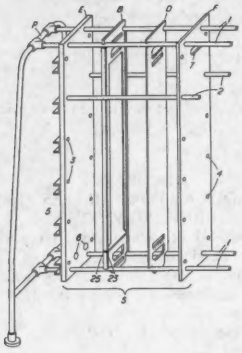
Jacques Breysse, Villeurbanne, and Jean Roget, Lyons, both of France, assignors to Rhone Poulenc, S.A., Paris, France

Original No. 3,831,763, dated Aug. 27, 1974, Ser. No. 228,887, Feb. 24, 1972. Continuation of Ser. No. 715,659, Aug. 19, 1976, abandoned. Application for reissue Jul. 11, 1978, Ser. No. 923,625

Claims priority, application France, Feb. 25, 1971, 71.06493; Jun. 1, 1971, 71.19774

Int. Cl.[3] **B01D** *31/00*

U.S. Cl. 210—236 **11 Claims**



11. Separation apparatus, useful essentially for ultrafiltration, said apparatus comprising, in combination:

(a) two rigid end plates;

(b) ends of said end plates;

(c) means for defining at least one inlet orifice in one end plate for the introduction of the fluid to be treated and at least one outlet orifice in the other end plate for the removal of the fluid to be treated, said orifices being placed adjacent to one end of the associated end plate;

(d) a plurality of membrane support plates in overlying relationship with respect to one another forming a stack, edges of said support plates being open to the exterior of the apparatus, means defining a recess in each face of each support plate, each said support plate carrying a semi-permeable membrane on each of its faces, each membrane covering a recess, each recess having means for supporting the said membrane for enabling the removal of the fluid which has crossed through the said membrane, and at least one duct means, the said duct means opening onto an edge of the said support plate which is open to the exterior of the apparatus;

(e) first and second apertures for the passage of the fluid to be treated through the support plates, the first apertures being adjacent one end of the support plates and aligned with one another to form a first duct through the stack, in communication with the inlet orifice of said one end plate, the second aperture being adjacent the other end of the support plates and forming a second duct through the stack;

(f) holding means extending between the two end plates effective to hold the support plates in position;

(g) jointing means provided near the periphery of each support plate and beyond the first and second apertures thereof, the said means sealing the support plate in a leak-proof manner to the adjacent support plate and determining the thickness of the layer of fluid to be treated flowing from one duct of the stack to the other, between and in contact with the membranes of two consecutive support plates;

(h) at least one intermediate plate in the stack dividing the said stack into at least two sub-assemblies; and

(i) one opening through each said intermediate plate aligned with only one of the two ducts to the stack, said intermediate plate enabling the fluid to be treated to flow in parallel in a sub-assembly and in series from one sub-assembly to the other.

Re. 30,633
3-LOWER ALKYLCARBAMYLSULFONAMIDO-4-PHENYLAMINOPYRIDINES, N-OXIDES, DERIVATIVES THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Jacques E. Delarge, Dolembreux; Charles L. Lapiere, Tongeren, and Andre H. Georges, Ottignies, all of Belgium, assignors to A. Christiaens Societe Anonyme, Brussels, Belgium

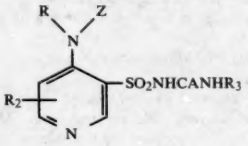
Original No. 4,018,929, dated Apr. 19, 1977, Ser. No. 568,759, Apr. 16, 1975. Continuation of Ser. No. 31,101, Apr. 18, 1979, abandoned. Application for reissue Feb. 7, 1980, Ser. No. 119,601

Claims priority, application United Kingdom, Apr. 17, 1974, 16836/74

Int. Cl.[3] **C07D** *213/74;* **A61K** *31/44*

U.S. Cl. 424—263 **9 Claims**

9. A compound of the formula:



in which:

R represents a hydrogen atom or a C_1-C_4 alkyl group;

R_2 represents a hydrogen atom or a C_1-C_4-alkyl group;

R_3 represents a C_1-C_4-alkyl, allyl, cyclohexyl, unsubstituted phenyl group or a phenyl group substituted by chloro;

A represents oxygen or sulfur; and

Z represents a C_1-C_4-alkyl, methylfuryl, pyridyl or unsubstituted phenyl group or a phenyl group substituted by one or two halogen atoms or by a C_1-C_4-alkyl, alkoxy, trifluoromethyl or nitro group or by a trifluoromethyl group and a halogen atom;

with the proviso that when R represents a C_1-C_4 alkyl group, Z may only represent a C_1-C_4 alkyl or a phenyl group as defined hereabove,

and the pharmaceutically acceptable base addition salts or acid addition salts of said compounds.

Re. 30,634
BENZYL OXIME ETHERS

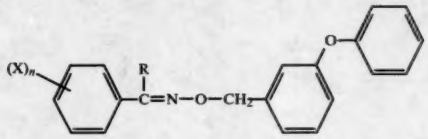
Arthur C. Henry, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Original No. 4,079,149, dated Mar. 14, 1978, Ser. No. 811,645, Jun. 30, 1977. Application for reissue Aug. 27, 1979, Ser. No. 70,271

Int. Cl.[3] **A61K** *31/15;* **C07C** *131/00*

U.S. Cl. 424—327 **8 Claims**

1. The E isomeric form of a compound of the formula



wherein n is 0, 1 or 2, X is lower halogen, or is alkyl or alkoxy of from one to three carbon atoms, and R is alkyl or alkenyl of from two to seven carbon atoms, optionally substituted by from one to a plurality of halogen atoms, or is cyclopropyl [, optionally substituted by from one to four methyl groups and/or one or two halogen atoms].

Re. 30,635

METHOD OF PRODUCING INTERNALLY COATED GLASS TUBES FOR THE DRAWING OF FIBRE OPTIC LIGHT CONDUCTORS

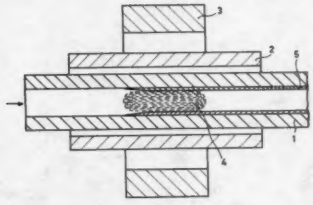
Dieter Küppers, Aachen; Hans Lydtin, Stolberg, and Ludwig Rehder, Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Original No. 4,145,456, dated Mar. 20, 1979, Ser. No. 852,068, Nov. 16, 1977. Continuation of Ser. No. 610,570, Sep. 5, 1975, abandoned. Application for reissue Sep. 28, 1979, Ser. No. 79,847

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1974, 2444100

Int. Cl.³ B05D *3/06;* **C23C** *11/00*

U.S. Cl. 427—38 **18 Claims**



12. A method of producing coatings on walls of glass comprising the steps of:

contacting at least a portion of the wall of the glass with a mixture of a gaseous glass-forming compound and gaseous oxygen at a pressure of about 1 to 100 Torr;

forming a plasma zone in the gas mixture in contact with the glass wall portion;

heating the glass wall portion, to a temperature which is above the temperature necessary to produce substantially stress-free coating layers on the heated tube wall portion but which is below the temperature at which there is substantial reaction of the mixture in the gas phase, to produce a nonisothermal plasma zone; and

thereby causing a heterogeneous reaction to occur on the glass wall resulting in the deposit on the glass wall of a glass coating.

Re. 30,636

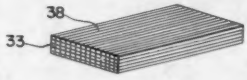
PRODUCTS OF CONVERTED LIGNOCELLULOSIC MATERIALS

Derek Barnes, Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Original No. 4,061,819, dated Dec. 6, 1977, Ser. No. 713,507, Aug. 11, 1976. Continuation of Ser. No. 502,065, Aug. 30, 1974, abandoned, which is a division of Ser. No. 237,705, Mar. 24, 1972, abandoned. Application for reissue Oct. 31, 1979, Ser. No. 90,036

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—294 **14 Claims**



1. A discrete dimensioned structural lumber product comprising adhesively bonded, substantially straight wood strands having lengths of at least 12 inches, average widths of 0.05 inch to 0.25 inch and average thickness of 0.05 inch to 0.5 inch, said strands being disposed, side by side lengthwise of the lumber product in substantially parallel relationship with adhesive bonding adjacent strands, *but with substantially no straight glue lines extending from one surface to the other of the product,* the total amount of adhesive *resin* solids in said lumber product being from 1% to 5% by weight, said lumber product having a modulus of elasticity for a given dry wood density within the boundaries in FIG. **4** of the curve of western softwood clear lumber as an upper limit of modulus of elasticity for a given dry wood density and as a lower limit of modulus of elasticity for a given dry wood density the curve for 24 inch [fiber] *strand* length 1% resin solids.

PLANT PATENTS

GRANTED JUNE 2, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,729
MINIATURE ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 1, 1980, Ser. No. 145,783
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by bi-color buds and flowers, being essentially a deep pink to light red color on top surface of petal with the reverse surface being white or near white, the bud and flower resembling the Kathy miniature rose in general size and form; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of small size semi-glossy to glossy foliage and an abundance of flowers borne usually one to the stem.

4,730
MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Mar. 28, 1980, Ser. No. 134,940
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by bud and flowers of a medium pink color, being of a shade of medium pink, (R. 5) Fischer color chart; easy to propagate from cuttings or budding, with ample supply of foliage to produce an attractive plant with an abundance of flowers; singly or in large sprays on long stems usually held high above plant.

4,731
APPLE TREE-GOLDENSHEEN #2 CULTIVAR

Paul C. Stark, Jr., Louisiana, Mo., assignor to Stark Brothers Nurseries & Orchards Co., Louisiana, Mo.

Filed Jan. 25, 1980, Ser. No. 115,546
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree of the Golden Delicious type which is a whole tree mutation of the Goldensheen apple tree substantially as shown and described, characterized by (a) the ability to form fruit with a deep Dresden yellow skin which is unusually free and resistant to russeting substantially identical to that of the Goldensheen cultivar, (b) a vigorous and spreading growth habit which yields a standard sized tree unlike the Goldensheen cultivar, and (c) smaller flowers which appear later than those of the Golden Delicious — Mullins cultivar.

4,732
RASPBERRY PLANT NAMED BABABERRY

Gertrude P. Millikan, 700 N. Stoneman, Alhambra, Calif. 91801

Filed Dec. 17, 1979, Ser. No. 104,565
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—46 **1 Claim**

1. I claim a new and distinct variety of everbearing red raspberry which can withstand and thrive in the warm dry climate portions of California and other similar climates and which is unusually hardy and vigorous, disease resistant and a heavy producer of large crops of firm, large, sweet, juicy raspberries of deep red color and excellent flavor, substantially as herein shown and described and identified by characteristics described above.

4,733
IMPATIENS PLANT

Cornelis P. Van den Berg, and James C. Mikkelsen, both of Ashtabula, Ohio, assignors to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 12, 1979, Ser. No. 103,087
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Impatiens known by the cultivar name Telstar, as described and illustrated, and particularly characterized as to novelty by the combined characteristics of excellent self-branching; spreading habit; highly variegated foliage; orchid/violet flowers; suitability for growing both outside in full sunlight and in hanging baskets; and by its good keeping quality both outside in full sunlight and in hanging baskets.

4,734
KALANCHOE PLANT

Cornelis P. Van den Berg, and James C. Mikkelsen, both of Ashtabula, Ohio, assignors to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 26, 1980, Ser. No. 134,115
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of kalanchoe plant known by the cultivar name Serenade, as described and illustrated, and particularly characterized by its early flowering, high degree of self-branching, bright red flower color, dense foliage, and by its well clustered flowers and floriferous habit.

PATENTS

GRANTED JUN. 2, 1981

ERRATA

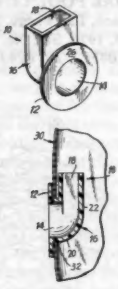
For CLASS	See PATENT NO.
434–156	4,270,284
411–021	4,270,434
493–287	4,270,443
411–112	4,270,591
294–169	4,270,678
493–430	4,270,744
369–170	4,270,758
298–003	4,270,786
516–704	4,271,086
564–305	4,271,091
369–041	4,271,334
369–136	4,271,335
037–021	4,271,512

PATENTS

GRANTED JUNE 2, 1981

GENERAL AND MECHANICAL

4,270,227
ARTICLES INCORPORATING AIR VENTS
Henry S. Wolfe, Harbor Bluff Largo, Fla., assignor to American Clearwater Corp., Paterson, N.J.
Filed Oct. 30, 1978, Ser. No. 955,900
Int. Cl.[3] A41D *3/04*; A43B *7/06*
U.S. Cl. 2—87 **18 Claims**



1. In an article defining a substantially closed space, said article having a substantially planar surface, the improvement comprising air vent means for preventing the entry of water into the space while accomplishing air circulation therethrough, said air vent means comprising:

(a) said planar portion of said article having an aperture therein;

(b) a base portion having a hole therein, said base portion being secured to the planar portion of said article about said aperture; and

(c) an elongate, substantially L-shaped member having a passage extending therethrough in communication with said hole, said L-shaped member extending inside said article with one leg secured to the base portion and the other leg extending upwardly toward the top of said article.

10. In an article defining a substantially closed space, said article having a substantially planar surface, the improvement comprising air vent means for preventing the entry of water into the space while accomplishing air circulation therethrough, said air vent means comprising:

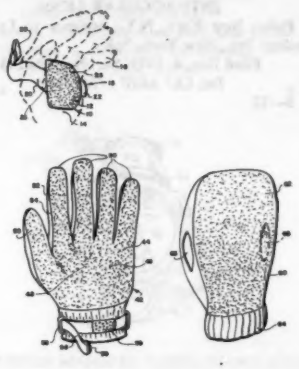
(a) said planar portion of said article having an aperture therein;

(b) a base portion having a hole therein, said base portion being secured to the planar portion of said article about said aperture; and

(c) an elongate, substantially L-shaped member having a passage extending therethrough in communication with said hole, said L-shaped member extending outside the article with one leg secured to the base portion and the other leg extending downwardly toward the bottom of said article.

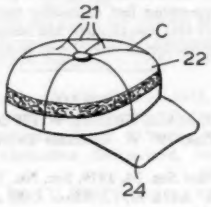
4,270,228
HAND COVER
Conrad J. Gaiser, 1048 Skyland Dr., Skyland, Zephyr Cove Area, Nev. 89448
Filed Feb. 12, 1979, Ser. No. 11,387
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—158 **19 Claims**

1. A hand cover which comprises a thin pad of a reticulated plastic foam with a thickness from 1/16 to about ¼ inch to enhance gripping of a tool grasped by the wearer without a significant loss of the kinestatic preception of the tool position, said pad being the only cover overlying the palm of a wearer's



hand, and binding means engageable about said hand to retain said cover on the wearer's hand.

4,270,229
METHOD OF SURFACE ORNAMENTED CAP
Charles Lipschutz, Louisville, Ky., assignor to Louisville Manufacturing Co., Inc., Louisville, Ky.
Filed Jan. 17, 1980, Ser. No. 113,129
Int. Cl.[3] A42B *1/02*
U.S. Cl. 2—195 **14 Claims**



1. A method of producing a cap having a plurality of panels upwardly and inwardly from a base portion, and surface ornamented so as to have the appearance of a three dimensional object, comprising:

preparing photographs of side views of the object from a plurality of positions spaced at equal angles around the object and the same as the number of panels in the cap;

preparing photographs of the top portions of the object corresponding to the number of side views;

cutting from each of the side view photographs of the object a piece corresponding to the developed shape of a panel having a dimension at the base of the piece in the direction of the periphery of the cap which is at least equal to the periphery of the base portion of the cap divided by the number of panels, and having the lower edge of the image of the object at the position corresponding to the lower edge of the panel in the cap;

cutting from each of the top portion photographs of the object further pieces corresponding to the tapered portions of corresponding panels and joining them to the firstmentioned pieces for forming composites of the panels of the cap with photographic representations of the three dimensional object thereon;

touching up the transition areas between the photographic representations on said composites; and

transferring images of said composites onto material for panels of the cap and assembling said panels into the cap.

4,270,230

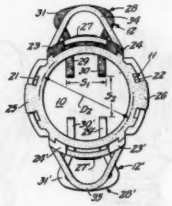
INTRAOCULAR LENS

Stanley Poler, New York, N.Y., assignor to Lynell Medical Technology Inc., New York, N.Y.

Filed Dec. 4, 1979, Ser. No. 100,243

Int. Cl.[3] A61F *1/16, 1/24*

U.S. Cl. 3—13 **29 Claims**



17. As an article of manufacture, an optically finished intraocular lens element having a generally circular periphery about its optical axis, and a mounting adapter for said lens element, said adapter comprising at least one circumferentially continuous annular body member having a circular inner edge of diameter less than the diameter of said lens element, at least one arcuate body member of inner-edge diameter substantially matching that of said circumferentially continuous annular body member, said body members being adjacent opposite axial sides of the peripheral region of said lens element and being connected to each other within a geometrical annulus radially outside said lens element, and a plurality of angularly spaced lens-positioning feet extending radially outwardly of the periphery of said lens element and having radially compliant integral connection to one of said body members.

4,270,231

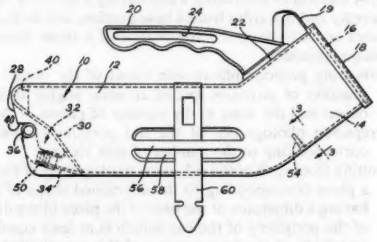
PORTABLE MALE URINAL WITH DRAIN MEANS

Frederick J. Zint, 707 W. Riverside Dr., Jeffersonville, Ind. 47130

Filed Sep. 24, 1979, Ser. No. 78,666

Int. Cl.[3] A47K *11/12;* A61G *9/00;* A61F *5/44*

U.S. Cl. 4—144.1 **10 Claims**



1. A portable male urinal comprising:

a. an elongate bottle-like container having a generally horizontal main body and an upwardly inclined entrance end that has an orifice that is adapted to be closed with a removable cap;

b. handle means supported from the urinal;

c. the end wall of the main body that is opposite the orifice having a recessed wall portion, a drain spout joined to the recessed wall portion near the bottom thereof so as not to protrude beyond the end wall; and

d. a drain hose joined to the drain spout for emptying the contents of the urinal into a lower receptacle;

e. the said end wall portion of the main body being provided with side notch means adapted for receiving the drain hose therethrough when the urinal is positioned upright and supported on its end wall during non-use of the urinal.

4,270,232

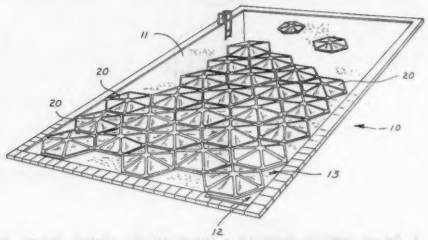
THERMAL POOL COVER

Ray D. Ballew, 3668 Bronco, Las Vegas, Nev. 89103

Filed Feb. 10, 1976, Ser. No. 656,787

Int. Cl.[3] E04H *3/19;* F24J *3/02*

U.S. Cl. 4—498 **4 Claims**



1. A cover for a swimming pool comprising: a multiplicity of cover segments each composed of a hexagonal frame of material which is lighter than water, said hexagonal frame defining an hexagonal space within said frame; at least one elongated brace extending between one point upon one side of said hexagonal frame to another point upon another side of said hexagonal frame, and the vertical cross section of the cover being an arch-like shape wherein the height at a midpoint is greater than the height at the perimeter; and, an hexagonal cover of heat transfer sheeting adhered to one side of each of the hexagonal frame elements, completely covering the space within the said hexagonal frame.

4,270,233

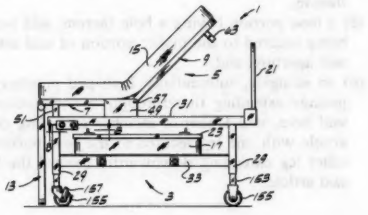
OBSTETRIC BED

Jack E. Mulligan, 6199 Bermuda Dr., St. Louis, Mo. 63135

Filed Feb. 15, 1979, Ser. No. 12,570

Int. Cl.[3] A61G *7/00*

U.S. Cl. 5—68 **15 Claims**



1. An obstetric bed comprising:

a base,

a support structure on top of the base for supporting a patient,

the support structure having a body section secured to the base in generally horizontal position, a head section pivotally connected to one end of the body section constituting its head end for swinging on the body section about an axis

extending transversely of the support structure between a first position in which it extends generally horizontally outwardly from the body section and a second position in which it is inclined upwardly with respect to the body section, and a foot section pivotally connected to the other end of the body section constituting its foot end for swinging on the body section about an axis extending transversely of the support structure between a first position in which the foot section extends generally horizontally outwardly from the body section beyond one end of the base constituting the foot end of the base and a second position in which it extends generally vertically downwardly from the body section at the foot end of the base,

means for holding the head section in its inclined position and in selected positions of adjustment between its inclined and horizontal positions, and

means for swinging the foot section between its horizontal and vertical positions and for holding it in selected positions of adjustment therebetween,

said swinging and holding means comprising a pin mounted on the base for rotation about the axis of the pin, the latter extending transversely with respect to the base, a linkage connected at one end to the foot section and at its other end, constituting its base end, to said pin for rotation of the base end of the linkage and said pin about said pin axis, and means for rotating the base end of the linkage about said pin axis whereby on rotation in one direction the foot section is raised toward its horizontal position and on rotation in the other direction the foot section is lowered toward its vertical position,

said rotating means comprising a screw shaft mounted on the base at the foot end of the base for rotation about its longitudinal axis, said shaft lying in a generally vertical plane extending generally longitudinally of the base, a nut threaded on the screw shaft, and a link pinned at one end to the nut and rigidly secured at its other end to said pin whereby rotation of the screw shaft about its axis effects travel of the nut along the shaft to rotate the link, the pin and the base end of the linkage about the axis of the pin for swinging the foot section between its vertical and horizontal positions.

4,270,234

NET-TYPE BEDS

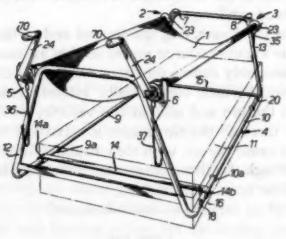
David R. James, Hasfield, England, assignor to James Investments Limited, Gloucester, England

Filed Sep. 24, 1979, Ser. No. 77,911

Claims priority, application United Kingdom, Oct. 3, 1978, 39016/78

Int. Cl.³ A47B *83/04*

U.S. Cl. 5—81 R **10 Claims**



1. A net-type bed adapted for mounting on a normal bed having a mattress base and a mattress, said net-type bed comprising: two rotatable shafts to support a flexible web between them, and a self-contained support frame which includes support crutches at each end of the frame for supporting said rotatable shafts, two spaced longitudinal frame members adapted to extend along either side of said normal bed mattress to rigidly interconnect and determine the longitudinal spacing of said end support crutches, and support means for said frame extending inwardly of said longitudinal members and adapted to rest on said mattress base of the normal bed below said mattress thereof.

4,270,235

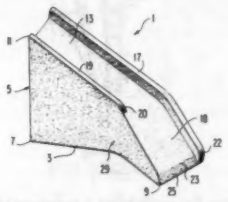
ARM SUPPORT PILLOW

Gordon L. Gutmann, 207 Sparks Ave., Jeff, Ind. 47130

Filed Nov. 8, 1978, Ser. No. 958,859

Int. Cl.³ A47C *21/00*

U.S. Cl. 5—431 **6 Claims**



1. A support device adapted for holding the arm of a person, comprising a body having

a bottom support surface, and

an upper face inclined upwardly at an angle from said bottom support surface and meeting said bottom surface at the lower end,

a bend in said body, said bottom surface and said upper face, said bend forming an obtuse angle, said support being shaped so that the arm of said person can be inclined by placing said arm on said upper face with the shoulder at the lower end and the wrist and hand at the upper end.

4,270,236

PROCESS FOR THE DYEING OF FIBRE MATERIAL

Jacques Zurbuchen, Pratteln, and Willi Leutenegger, Bottmingen, both of Switzerland, assignors to CIBA-GEIGY Corporation, Ardsley, N.Y.

Continuation of Ser. No. 551,934, Feb. 24, 1975, abandoned, which is a continuation of Ser. No. 302,697, Nov. 1, 1972, abandoned. This application Jun. 7, 1976, Ser. No. 693,594

Claims priority, application Switzerland, Nov. 9, 1971, 16260/77

Int. Cl.³ D06P *7/00*

U.S. Cl. 8—159 **8 Claims**

1. A batch process for dyeing fiber material comprising the steps of first applying to the fiber material a non-thickened aqueous dye liquor, consisting essentially of

(a) a water-soluble or water-dispersible dyestuff having affinity for the fiber material

(b) 0.2 to 10 g/l of a non-foaming anionic dispersing agent selected from the group consisting of benzene monosulfonic acid, naphthalene monosulfonic acid, C_1–C_4-alkyl benzene monosulfonic acid, C_1–C_4-alkyl naphthalene monosulfonic acid, tetrahydro naphthalene sulfonic acid, dinaphthylmethane disulfonic acid, diphenyl-naphthylmethane sulfonic acid, a 2:1 to 2:2 adduct thereof with formaldehyde, and water-soluble salts thereof, and

(c) water,

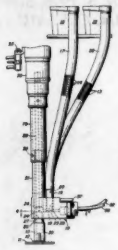
at a goods-to-liquor ratio of 1:1.5 to 1:2.5 and at a temperature below the absorption temperature of the dyestuff, subsequently in a closed container subjecting the fiber material and applied aqueous dye liquor to shaking or tumbling in a rotating drum sufficient to distribute evenly the aqueous dye liquor on the fiber material while still maintaining the temperature below the absorption temperature of the dyestuff, and finally heating the fiber material and the evenly distributed aqueous dye liquor to exhaust the dyestuff onto the fiber material.

4,270,237

PORTABLE APPARATUS FOR ASSEMBLING NUTS AND WASHERS ON THREADED STUDS

Marvin M. Breeze, Jr., and Virgil W. Wood, both of Rockwall, Tex., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,124
Int. Cl.[3] B23P *19/08*
U.S. Cl. 10—155 R 12 Claims



1. An apparatus for assembling a polygonal-shaped nut onto a threaded stud, which comprises:

a housing having a passageway extending therein for receiving a nut;

a sleeve rotatably mounted in said housing and having a slot formed in the peripheral wall for passage of the nut, said sleeve having a polygonal-shaped interior conforming to the polygonal-shaped nut;

a driver rod slidably mounted at one end within a first end section of the sleeve;

a motor for rotating the driver rod and sleeve;

a clutching device interposed between said driver rod and motor including a clutching element for holding said driver rod from rotation and for positioning said sleeve to align the slot with the passageway in said housing;

means mounted in said housing for moving the nut through the passageway and slot into said sleeve; and

means for retaining the nut within the sleeve while a force is applied to depress said driver rod to move relative to the sleeve to disengage the clutching element and move the rotating driver rod to push the nut along the rotating sleeve onto a threaded stud positioned within the second end section of the sleeve.

4,270,238

CLEANING TOOL

Robert L. Shallenberg, Wheaton, and Roland A. Blomgren, Glen Ellyn, both of Ill., assignors to Service Master Industries, Inc., Downers Grove, Ill.

Continuation-in-part of Ser. No. 929,355, Jul. 31, 1978, abandoned, which is a continuation of Ser. No. 841,379, Oct. 12, 1977, abandoned, which is a continuation of Ser. No. 647,795, Jan. 9, 1976, abandoned. This application Jul. 18, 1979, Ser. No. 58,485
Int. Cl.[3] A47L *11/38*
U.S. Cl. 15—321 10 Claims

1. An improved cleaning tool for the facile cleaning of walls and ceilings, the improved cleaning tool comprising:

(A) means for supplying a cleaning fluid under pressure;

(B) a block assembly which has one surface adapted to be positioned adjacent to the surface of a wall or ceiling to be cleaned and which has a front edge, a rear edge and side edges, the block assembly being adapted to be moved back and forth across the surface of the wall or ceiling to be cleaned in a direction generally perpendicular to the front and rear edges of the block assembly and including:

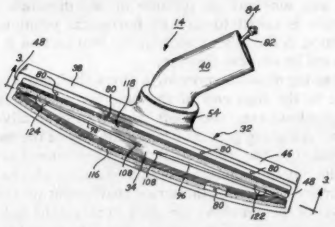
(i) a first continuous row of bristles that extends generally along the front edge of the block assembly from one side edge of the block assembly to the other side edge and between the front edge and the longitudinal axis of the block assembly and that have their distal ends projecting generally perpendicularly from the one surface of the block assembly toward the surface of the wall or ceiling to be cleaned;

(ii) a second continuous row of bristles that extends generally along the rear edge of the block assembly from one side edge of the block assembly to the other side edge and between the rear edge and the longitudinal axis of the block assembly and that have their distal ends projecting generally perpendicularly from the one surface of the block assembly toward the surface of the wall or ceiling to be cleaned; and

(iii) a plurality of spaced nozzles that are disposed adjacent to the first and second rows of bristles and between the first row of bristles and the front edge of the block assembly and between the second row of bristles and the rear edge of the block assembly;

(C) means for connecting the nozzles in the block assembly with the means for supplying cleaning fluid so that cleaning fluid can flow to and through the nozzles;

(D) means for controlling the flow of cleaning fluid through the nozzles to substantially uniformly wet the bristles in the first and second rows of bristles so that a thin film of cleaning fluid is applied to the surface of the wall or ceiling to be cleaned, as the block assembly is moved back and forth across the surface, by the distal ends of the bristles;



(E) slot means formed in the block assembly and having first and second ends, having a central axis disposed substantially parallel to the longitudinal axis of the block assembly and having generally parallel, relatively closely spaced side walls that are generally parallel to the central axis and having tapered end walls, with the second end of the slot means having a crossectional area less than one crossectional area of the first end of the slot means and with the first end opening to the one surface of the block assembly between the first and second rows of bristles;

(F) means for providing a source of vacuum capable of sucking air into and through the block assembly when the distal ends of the bristles are in contact with the surface to be cleaned; and

(G) means for connecting the second end of the slot means with the vacuum source means so that air sucked into the block assembly causes the extraction of the cleaning fluid from said surface substantially instantaneously as it is applied thereto and so that the velocity of the air being sucked through the slot means is relatively high so as to thereby cause the air, with the entrained fluid, to flow into and through the slot means without substantial condensation of the entrained fluid.

4,270,239

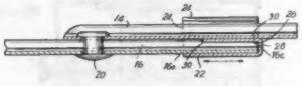
INTERLOCK SUPPORT STRUCTURE

Meyer A. Gross, New York, N.Y., assignor to New York Toy Corporation, New York, N.Y.

Filed Aug. 8, 1979, Ser. No. 64,658
Int. Cl.[3] A47B *95/02*
U.S. Cl. 16—112 3 Claims

1. An interlock support structure for aligning first and second, substantially flat, elongated channel members and locking said members in aligned relationship comprising a locking

channel having a base in a plane generally parallel to the plane of said members, side flanges extending from said base defining therebetween a locking channel opening, a stop member substantially perpendicular to said base and terminating one end of said opening and a channel projection member generally parallel to and overlying said base and generally perpendicular to



said stop member, all constructed and arranged such that said second member inserts into said opening with one of its ends abutting said stop member and said locking channel being slidable with respect to said first member, and said channel projection member received within the channel of said second channel member thereby improving the locking relationship and alignment of said channel members.

4,270,240

HINGE CUP FOR FURNITURE HINGES

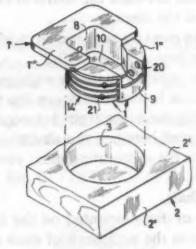
Ernst Zernig, Hemer, and Willi Pittasch, Herford, both of Fed. Rep. of Germany, assignors to Richard Heinze GmbH & Co. KG, Herford, Fed. Rep. of Germany

Filed Aug. 7, 1978, Ser. No. 931,310

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 7725760[U]

Int. Cl.³ E05D *11/00*

U.S. Cl. 16—148 **4 Claims**



1. A hinge cup fitting for connecting a furniture hinge into a hole in a furniture panel comprising:

anchoring means for fitting into said hole;

a metal insert part;

said anchoring means having at least two separate sections each having an outer peripheral surface and an inner peripheral surface, said outer peripheral surface abutting said hole and having means for anchoring therein, said inner peripheral surface abutting said insert part;

a web connecting said at least two separate sections together into an integral unit;

a flange on said insert part covering said web;

at least one of said at least two separate sections including a projection on its inner peripheral surface; and

said metal insert part including at least one hole aligned with said projection, said at least one projection engaging said at least one hole in said metal insert part.

4,270,241

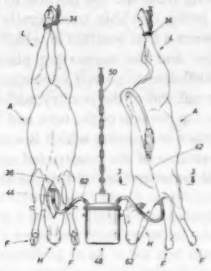
PROCESS FOR SLAUGHTERING OF ANIMALS BY BLEEDING

Alphonse M. Braga, Fullerton, Calif., assignor to Radian Corporation, Austin, Tex.

Filed Oct. 25, 1977, Ser. No. 845,342

Int. Cl.³ A22B *3/00, 5/04*

U.S. Cl. 17—1 C **11 Claims**



1. In the process of killing animals by bleeding wherein the animal is stunned prior to said bleeding, the improvement comprising:

(a) making an incision in said animal to expose generally the midline of the anterior wall of the thorax of said animal,

(b) inserting caudally a generally elongate, tubular member through said incision, said tubular member being inserted anteriorly of the sternum, generally midway between the forelimbs, and generally along a line between the point of insertion and the rectum of the animal, such that the inserted end thereof substantially, selectively enters a major mediastinal blood vessel of said animal without substantial en masse severing of plural major blood vessels by said insertion of said tubular member, and

(c) collecting blood flowing through said tubular member from said blood vessel.

4,270,242

APPARATUS FOR AUTOMATIC EVISCERATION OF KILLED POULTRY

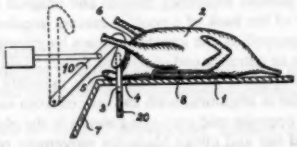
Kjeld Løth, and Peter Løth, both of 4, Elmegardsvej, DK-9460 Skovsgard, near Brovst, Denmark

Division of Ser. No. 859,218, Dec. 9, 1977, Pat. No. 4,208,764. This application May 14, 1979, Ser. No. 38,909

Claims priority, application Denmark, Dec. 17, 1976, 5719/76; Dec. 17, 1976, 5720/76

Int. Cl.³ A22C *21/06*

U.S. Cl. 17—11 **14 Claims**



1. An apparatus for automatic evisceration of killed poultry comprising:

a substantially horizontal supporting plate adapted to receive poultry lying on its back in a predetermined position in relation to the supporting plate;

at least one processing station;

said supporting plate being movable to a position opposite said at least one processing station; and

clamping means provided at one free terminal edge of the

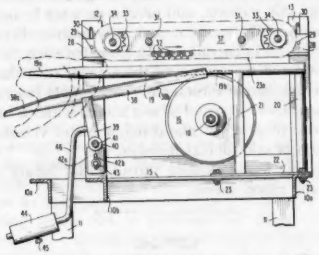
supporting plate for detachably securing the tail head of the poultry to the supporting plate, said clamping means including a bow carried throug a slot formed in the supporting plate opposite the tail head of a correctly positioned animal, said bow having an eye opening for receiving the tail head, said eye opening having a top portion and bottom portion, said top portion having a cross-section corresponding substantially to the tail head of the poultry, the eye opening increasing substantially in width downwardly from the top portion to the bottom portion, the bow being movable transversely of said supporting plate between a first position in which the bottom portion of the bow and the supporting plate form together an opening sufficient to permit unobstructed insertion of the triangular tail end of the poultry, and a second position in which the top portion of the bow and the supporting plate form together an opening which is somewhat smaller than the cross-section of the constricted area of the poultry to be secured between the tail end the the carcass.

4,270,243

POULTRY BREAST SPLITTING APPARATUS

Eugene J. Lewis, Rte. #1, Box 306, Demorest, Ga. 30535

Filed Nov. 29, 1979, Ser. No. 98,468
Int. Cl.[3] A22C *21/00*
U.S. Cl. 17—11 **8 Claims**



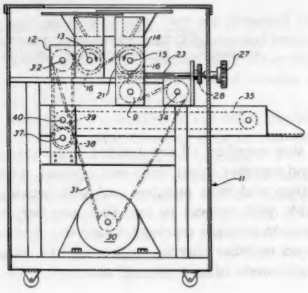
1. A device for splitting the breast of a poultry carcass comprising a support frame, an elongated feed bar affixed to said frame and adapted to support a poultry carcass impaled thereon between the carcass back and breast bones, a cutting blade mounted on said frame for rotation in a plane containing said feed bar and about a rotational axis perpendicular to and offset laterally of said feed bar between its ends, means for rotating said cutting blade about its axis, conveying means extending in the lengthwise direction of said feed bar in closely spaced, parallel adjacency thereto and adapted to contact the exterior of the back of a poultry carcass impaled on said feed bar for propelling the impaled carcass lengthwise of said feed bar from an entrance end of said bar through said cutting blade, and an elongated carcass breast guide movably supported on said frame in alignment with and spaced from said feed bar on the side opposite said conveying means in the plane containing said feed bar and cutter blade for movement relative to said feed bar in said contained plane between a feed position in which said breast guide is maintained in pressing contact with the exterior breast portion of an impaled carcass being carried by said conveying means along said feed bar into contact with said cutting blade and a retracted position in which the space between said breast guide and said feed bar entrance end is increased sufficiently to permit a carcass to be inserted between said feed bar and breast guide for impalement on said feed bar.

4,270,244

METHOD AND APPARATUS FOR MACERATING MEAT

Salvatore J. Lo Biondo, 12 Decamp Ct., West Caldwell, N.J. 07006, and Joseph V. Lo Biondo, 79 Winding La., Bloomfield, N.J. 07003

Continuation of Ser. No. 866,630, Jan. 3, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,755
Int. Cl.[3] A22C *9/00*
U.S. Cl. 17—52 **15 Claims**



1. A method for macerating meat to effect deep penetration of the interior thereof comprising,

(a) spacing a pair of shafts in general parallelism with each other at a distance less than the width of a piece of meat to be macerated,

(b) contra-rotating the shafts,

(c) mounting radially slotted discs with blunted peripheral and blunted radial edges on the shafts wherein the peripheral edges of the discs on the respective shafts are spaced apart to define a vertical plane therebetween,

(d) mounting crushers on the shafts between the discs to space the slotted discs apart from each other, with the crushers' peripheries disposed generally at the commencement of the slots,

(e) passing meat between the shafts in engagement with the crushers and the discs,

(f) crushing the meat by engagement with the crushers as the meat passes between the shafts,

(g) slitting the crushed meat by engagement of it with the slotted discs as it passes between the shafts, and

(h) combing the meat out from between the discs after the meat has passed between the shafts.

3. A macerator for macerating meat comprising,

(a) a first shaft,

(b) a second shaft,

(c) a plurality of discs mounted on the shafts,

(d) radial slots in the periphery of each disc,

(e) blunted peripheral and blunted radial edges on each disc,

(f) the discs on the first shaft offset with respect to the position of the discs on the second shaft,

(g) crusher rings mounted on the first and second shafts between the discs to urge the meat toward the discs on the opposite shaft,

(h) the crusher rings on each shaft extending radially substantially to the point of origin of the radial slots in the discs,

(i) combs positioned below each shaft,

(j) the teeth of the combs intruded between the discs on the respective shafts whereby meat jammed between the adjacent discs is stripped away, and

(k) the peripheral edges of the discs on one shaft normally extending toward a plane generally tangential to the edges of the discs wherein the peripheral edges of the discs on the first and second shafts are spaced apart to define a vertical plane therebetween.

4,270,245

LAG OR STAVE ASSEMBLY FOR KIRSCHNER BEATERS

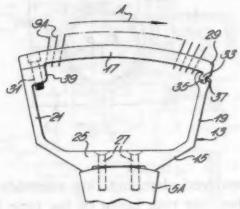
David B. Stewart, Newtyle; William R. Stewart, Craigmount, and John M. C. Dickinson, Largoward, by Elie, all of Scotland, assignors to Wm. R. Stewart & Sons (Hacklemakers) Ltd., Dundee, Scotland

Filed Oct. 22, 1979, Ser. No. 87,386

Claims priority, application United Kingdom, Oct. 24, 1978, 41779/78

Int. Cl.[3] D01G *9/04*

U.S. Cl. 19—85 13 Claims



1. A lag assembly for a Kirschner beater comprising a support part for connection to a leg of the spider of the beater and a working part, a plurality of pins projecting from said working part, which pins are so located in said working part that their tips provide a working surface which is convex when viewed tansverse to its length, means adjacent one longitudinal edge of said working part removably, hingedly securing said working part to the said support part and further means adjacent an opposite longitudinal edge for fixedly securing said working part to the adjacent edge of said support part.

4,270,246

CARDING FLAT ARRANGEMENT

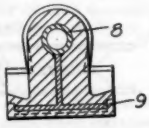
Wolfgang Beneke, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trutzschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,217

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742420

Int. Cl.[3] D01G *15/24*

U.S. Cl. 19—113 1 Claim



1. A carding flat arrangement comprising: lateral end head sections guided along sliding guide members; a center section of substantially low specific gravity material; said end head sections being pressable against said sliding guide members; said end head sections having sliding surfaces of wear-resistant material of substantially high specific gravity; T-shaped stabilizing elements inserted into said center section, said stabilizing elements being connected to said end head sections; said end head sections having sliding surfaces coated with a friction-reducing material; a tube attached to said T-shaped reinforcing element, an outside end of said tube being threaded for fastening screw of flats chain.

4,270,247

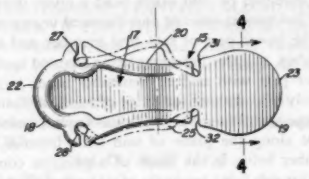
CLASP

John Freedom, 17100 S. Harlem Ave., Tinley Park, Ill. 60477

Filed Mar. 29, 1979, Ser. No. 25,191

Int. Cl.[3] B65D *77/10, 63/00*

U.S. Cl. 24—30.5 R 12 Claims



1. An improved clasp adapted to encircle and lock about a relatively flexible article comprising in combination,

a clasp bar having a pair of clasp arms extending arcuately outwardly from a central junction point and each of said clasps arms terminating in an outer end thereof,

said clasp arms and central junction point being substantially co-extensive and formed of a reasonably resilient material,

said outer ends of said clasp arms being spaced a distance apart in the normal disposition thereof,

and each of said outer ends of said clasp arms provided with cooperating lock means which cooperate to encircle and lockingly retain a flexible article between said clasp arms and said lock means,

said clasp bar positioned adjacent to a relatively flexible article at said central junction point and said lock means manipulated to encircle the flexible article and lockingly engage the same between said pair of clasp arms.

4,270,248

SLIDE FASTENER WITH BOTTOM STOP

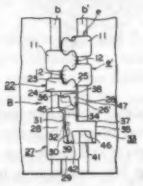
Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 61,883

Claims priority, application Japan, Jul. 31, 1978, 53-105407[U]

Int. Cl.[3] A44B *19/36*

U.S. Cl. 24—205.11 R 8 Claims



1. A slide fastener comprising:

(a) a pair of flexible stringer tapes carrying resilient marginal beads on and along the respective inner longitudinal edges thereof;

(b) two rows of discrete interlocking fastener elements mounted on and along said marginal beads;

(c) a slider slidably mounted on said rows of interlocking fastener elements and adapted to reciprocally slide along said interlocking fastener element rows to engage or disengage them for opening or closing of said slide fastener, said slider having a flared front end and a tapered tear end and including a neck portion formed centrally on said flared front end and a pair of opposed side flanges formed on its both sides to define therebetween a Y-shaped channel for reciprocal slidable passage of said interlocking fastener element rows therethrough; and

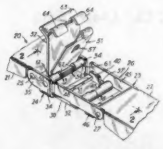
(d) a bottom end stop attached to said marginal beads at one end of said rows of interlocking fastener elements, said bottom stop including a first member mounted on one bead and adapted to engage at its upper part with the lowermost interlocking fastener element carried on the other bead, a second member mounted on said one bead a given distance below said first member and a third member mounted on said other bead a given distance below said lowermost element and disposed in opposed relation to the lower part of said first member and said second member, said third member being adapted to engage at its upper part with said first member so as to slide transversely of and along the plane of said slide fastener and to engage at its lower part with said second member so as to pivot along the plane of said slide fastener, said third member being in the shape of a polygon comprising an interior side lying inwardly of said other bead, an exterior side lying outwardly of said other bead, an upper interior corner contiguous to said interior side and an upper exterior corner contiguous to said exterior side, said third member being provided adjacent said upper interior corner with an abutment for abutting engagement with said neck portion of said slider, said upper interior corner being above said upper exterior corner thus to leave said resilient bead intact beside the former, the dimension of said third member as disposed when passing between said side of said neck portion and said corresponding flange, being slightly smaller than the distance between said side of said neck portion and said corresponding flange.

4,270,249

CLASP FOR A BRACELET OR THE LIKE

Stanley Meyerson, Brooklyn, N.Y., and Seymour Hauser, North Bergen, N.J., assignors to Admiral Watchband Co., Inc., New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,433
Int. Cl.³ A44B *13/00*
U.S. Cl. 24—241 PP **16 Claims**



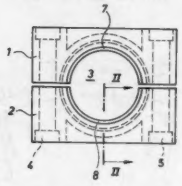
1. A clasp for a bracelet or the like comprising: a receiver for connection to one end of said bracelet; an end hook on the distal end of said receiver and having an opening on one side of said receiver; a loop for connection to another end of the bracelet and removably engageable in said end hook through the opening thereof; a first cover hinged to said receiver and swingable into and out of overlying relation with said receiver and said end hook on said one side of said receiver; a catch on said first cover for releasable snap engagement about said end hook for releasably retaining said loop in said end hook; a second cover hinged to said receiver and swingable with said first cover into and out of overlying relation with said first cover and said receiver; a catch on said second cover for releasable snap engagement about said end hook; connection means for operatively connecting said first and second covers for simultaneous swinging movement enabling simultaneous opening of said covers; and lost motion means associated with said connection means for affording limited relative movement between said covers before simultaneous movement of said covers.

4,270,250

CLAMPING RING FOR TUBULAR MEMBERS

Otmar Schön, Am Kirschenberg 5, D-6601 Scheidtberg, Fed. Rep. of Germany

Filed Apr. 1, 1980, Ser. No. 136,318
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 7909896[U]
Int. Cl.³ F16L *3/10*; A44B *21/00*
U.S. Cl. 24—263 A **1 Claim**



1. In an improved clamping ring assembly for clamping a tubular member, the ring being of the type having first and second bodies formed with semi-cylindrical recesses defining a tubular passage to receive the tubular member, at least one annular groove of predetermined depth in each of said recesses, each said groove being trapezoidal in cross section widening toward the opening thereof, and at least one generally semi-cylindrical elastomeric insert being a radially protruding rib to engage one of said annular grooves, and means for urging said bodies toward each other with said recesses facing each other, the improvement wherein

each said annular rib is trapezoidal in cross section and is shaped to be received in its associated groove substantially without distortion, and

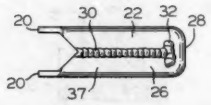
the radial dimension of each said rib is significantly smaller than the depth of the associated groove so that a gap remains between the rib and the bottom of the groove when the insert and bodies are assembled.

4,270,251

MUFFLER CLAMP AND METHOD OF MAKING SAME

Ralph K. Evans, Plantsville, and Roy S. Florian, Southington, both of Conn., assignors to Nickson Industries, Inc., Plantsville, Conn.

Filed Mar. 30, 1979, Ser. No. 25,340
Int. Cl.³ B65D *63/00*; F16L *21/06*
U.S. Cl. 24—277 **7 Claims**

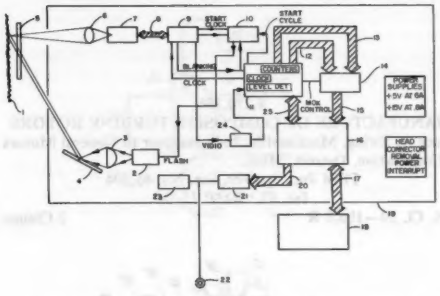


1. A saddle member for a saddle clamp, said saddle member comprising a generally U-shaped body portion provided by a pair of spaced-apart, generally parallel side wall portions and a base portion extending therebetween and end wall portions extending between the side margins of said side wall portions, said end wall portions each comprising oppositely extending side-wall flanges on the side margins of said side wall portions and extending over at least a major portion of the vertical height thereof, base flanges extending from said base portion to said side-wall flanges, and weldments rigidly bonding the opposed edges of said side-wall flanges and bonding the edge of said base flange to said side-wall flanges.

4,270,252
APPARATUS TO COUNT AND CONTROL CRIMPS IN A MOVING TOW OF YARN

David M. Harrison, Chester, Va.; Walter E. Watson, III, Beckley, W. Va.; Maurice S. Moore, Hopewell, Va., and Roger E. Jermyn, Columbia, S.C., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Jan. 3, 1978, Ser. No. 866,303
Int. Cl.[3] D02G 1/12
U.S. Cl. 28—250 18 Claims



2. An apparatus to count closely spaced variations of light intensity in a single pulse of light transmitted from a target having striations to cause said variations in light intensity comprising, in combination

a stroboscopic light,

a condenser lens,

a mirror,

a focusing lens,

a scanner photodiode array to sense said variations in intensity of light in said single pulse and transmit an electronic signal in response,

means to read out said electronic signal, and

means to trigger said stroboscopic light,

said stroboscopic light being located to transmit intense light pulses, initiated by said means to trigger, to pass through said condenser lens and then to and from said target onto said scanner photodiode array, said scanner photodiode array being electrically connected to counter means to count the number of variations in said single pulse of light and to said read-out means so that the number of striations on the target is indicated, said focusing lens being located so that light reflected from said target is focused onto said diode array, and said mirror being located so that said pulse of stroboscopic light is reflected onto said target and said apparatus is located on the same side of said target as said pulse is reflected from.

17. An apparatus to count closely spaced variations of light intensity in a single pulse of light transmitted from a target having striations to cause said variations in light intensity comprising, in combination

a stroboscopic light,

a condenser lens,

a scanner photodiode array to sense said variations in intensity of light in said single pulse and transmit an electronic signal in response,

means to read-out said electronic signal,

means to trigger said stroboscopic light,

means to move said target,

a controller,

crimping means, and

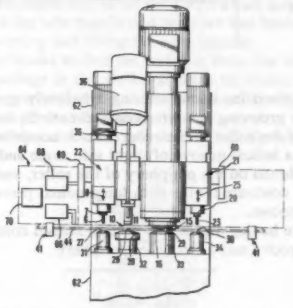
means to exert pressure on said crimping means,

said stroboscopic light being located to transmit intense light pulses, initiated by said means to trigger, to pass through said condenser lens and then to and from said target onto said scanner photodiode array, said scanner photodiode array being electrically connected to counter means to count the number of variations in said single pulse of light and to said read-out means so that the number of striations on the target is indicated, and said moving target is a moving tow of yarn exiting from said crimping means, whereby said controller controls discharge of said yarn tow from said crimping means by regulating said pressure means in response to said signal.

4,270,253
APPARATUS FOR SIMULTANEOUS MACHINING OF A STACK OF PLATE-LIKE WORKPIECES

Eugen Herb, Ditzengen, and Berthold Leibinger, Gerlingen, both of Fed. Rep. of Germany, assignors to Trumpf America, Inc., Farmington, Conn.

Filed Sep. 20, 1978, Ser. No. 944,165
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817217
Int. Cl.[3] B23P 11/00
U.S. Cl. 29—26 A 8 Claims



1. In a machine tool for the simultaneous machining of a stack of platelike workpieces, the combination comprising:

A. a frame;

B. a table within said frame and having a work supporting surface;

C. means for detachably securing a stack of workpieces on a metal base plate along said work-supporting surface of said table;

D. first drilling means supported in said frame for movement substantially perpendicularly to said work supporting surface for drilling an aperture in a workpiece stack aligned therewith;

E. riveting means supported in said frame for movement substantially perpendicularly to said work supporting surface to insert a rivet into the drilled aperture and deform it into engagement with the surfaces of the workpieces of the stack defining the aperture therethrough to maintain the stack in assembly;

F. machining means supported in said frame for movement substantially perpendicularly to said work-supporting surface to machine the stack of workpieces simultaneously;

G. second drilling means supported in said frame for movement substantially perpendicularly to said work supporting surface and

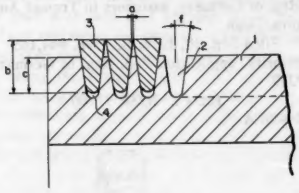
H. means for moving said stack securing means within said frame substantially perpendicularly to the axes of movement of said drilling, riveting and machining means in a first direction and in at least a second direction along an axis which is angularly disposed relative to the axis of said first direction. including movement between said first drilling means, riveting means, machining means and one of said first and second drilling means, said movement to said one of said drilling means being for the purpose of drilling out the rivet from the stack following movement of the stack from said machining means.

4,270,254

METHOD FOR MAKING GROOVED ROLLERS FOR DEHYDRATING RUNS OF MATERIALS

Dag Berglöff; Alois Wohlfarter; Otto Heissenberger; Martin Mühlhauser, all of Graz, and Franz Petschauer, Lannach, all of Austria, assignors to Anstalt für Strömungsmaschinen Gesellschaft mbH, Austria

Filed Apr. 26, 1979, Ser. No. 33,703
Int. Cl.[3] B21D *53/12*; B21H *1/12*; B21K *1/02*
U.S. Cl. 29—148.4 D 9 Claims



1. A method for manufacturing a helically grooved roller where the grooving is continuous and extends helically from one rim of the roller to the other, which comprises

cutting a helical groove of slight side angle and in the form of a thread on the periphery of the roller, and then pressing a contoured wire with longitudinal prestressing into the groove,

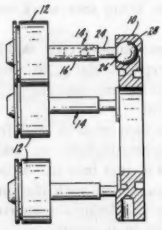
said wire having a generally wedge-shaped configuration in the groove and a flat outer periphery.

4,270,255

METHOD OF MANUFACTURING A SWASH PLATE ASSEMBLY

Edmund J. Klimek, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 26, 1979, Ser. No. 24,219
Int. Cl.[3] B23P *15/00*
U.S. Cl. 29—156.5 A 3 Claims



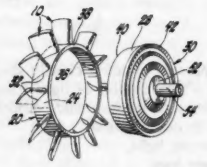
1. A method of manufacturing a swash plate assembly comprising the steps of: (1) fabricating a plurality of piston subassemblies, each of which is made by (a) providing a first connecting rod section with one end thereof formed with a substantially spherical surface; and (b) die casting a piston so that a portion of the piston captures said spherical surface in a complementary socket to form a ball/socket connection; (2) providing a plurality of second connecting rod sections each having one end formed with a spherical surface; (3) die casting a swash plate such that the ends of each second connecting rod section are captured in a complementary socket to form ball-/socket connections between said swash plate and said second connecting rod sections; (4) supporting said piston subassemblies and said swash plate in a holding fixture to align the respective said first and second connecting rod sections; (5) moving together and telescoping free ends of said connecting rod sections to effect the required final total length dimension from the bottom of said swash plate to the top of said piston subassemblies; and (6) joining said first and second connecting rod sections together of each of said piston subassemblies and said swash plate.

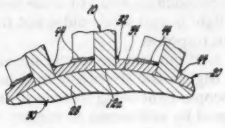
4,270,256

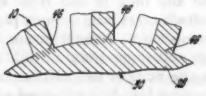
MANUFACTURE OF COMPOSITE TURBINE ROTORS

Bruce A. Ewing, Martinsville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 6, 1979, Ser. No. 46,104
Int. Cl.[3] B23P *15/04*
U.S. Cl. 29—156.8 R 2 Claims







1. A method for manufacturing a composite turbine wheel having a disc hub of a first material and including a plurality of airfoils on the outside diameter comprising the steps of preforming a hub ring of expendable material to have a plurality of circumferentially spaced slots therein; forming a plurality of airfoil elements each having a base thereon, inserting said airfoil bases into said slots for locating said airfoils around the outer perimeter of said expendable ring and to expose the bases at the inner surface of said ring, preforming a disc hub having a controlled O.D. thereon, fitting the expendable ring on said controlled O.D. to mate the bases with said controlled O.D., sealing exterior joints between each of said airfoil elements and said expendable ring, sealing exterior joints between said ring and said disc hub, thereafter applying a hot isostatic environment to the full exposed exterior surfaces of said airfoils, expendable ring and hub disc to produce a resultant force acting inwardly on each of said airfoil elements which maintain the hub disc at an elevated temperature to produce metallurgical diffusion at the interface of the mating bases and controlled O.D. to produce a diffusion bond between the airfoils and the disc hub, thereafter dissolving all of the ring of expendable material from the joined airfoil elements and the disc hub to form controlled flow passages between each of said airfoils.

4,270,257

METHOD FOR MANUFACTURING A FUEL INJECTION VALVE

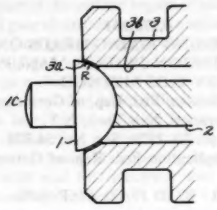
Kei Kimata, Aichi, and Shoichi Fukunaga, Iwata, both of Japan, assignors to NTN Toyo Bearing Co. Ltd., Osaka, Japan

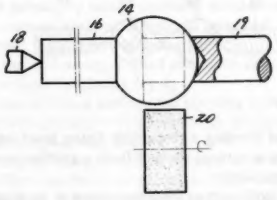
Continuation of Ser. No. 678,762, Apr. 22, 1976, abandoned. This application Oct. 7, 1977, Ser. No. 840,297

Claims priority, application Japan, Apr. 26, 1975, 50/50923; Apr. 28, 1975, 50/51831

Int. Cl.[3] B23P *15/00, 13/00*

U.S. Cl. 29—157.1 R **4 Claims**





1. A method for manufacturing a valve member for use in a fuel injection valve present in an internal combustion engine wherein the valve member is axially movable to and from a cooperating seat member to permit the fuel injection valve to fully open and close, the method comprising the steps of butt welding a steel ball bearing to one end of a shaft member having the opposite end thereof threaded, mounting the welded ball and shaft member at its opposite ends in a revolvable state in support means therefor and thereafter grinding the steel ball as said welded ball and shaft are rotated about an axis extending through said shaft to cut away a portion of the steel ball remote from the shaft member leaving a remaining spherical surface whereby said grinding forms a rod-like extension extending from the spherical ball and so that its remaining spherical surface terminates as a circular edge constituting a small circle that is smaller than a circle on the surface of the sphere in a plane passing through the center of the sphere with the small circle lying in a plane perpendicular to the axis of the shaft member and more proximate to the shaft member than is the center of the sphere, whereby fuel injected past said remaining spherical surface will flare as it leaves said edge.

4,270,258

METHOD OF RETUBING A STEAM GENERATOR

Harry N. Andrews, Export, Pa.; Edmund C. Eglinton, St. Petersburg, Fla.; Joseph W. Gulaskey, N. Huntingdon, Pa.; Leonard J. Balog, Pittsburgh, Pa., and Robert W. Beer, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 28, 1978, Ser. No. 974,161

Int. Cl.[2] B23P *7/00*

U.S. Cl. 29—157.4 **10 Claims**

1. A method of retubing a steam generator having a shell with an enlarged upper portion, a tubesheet disposed adjacent the lower end of the shell, a plurality of U-shaped tubes seal welded to the tubesheet and extending upwardly therefrom to form a closely-packed tube bundle, a head divided into an inlet and outlet compartment, each compartment having a manway and respectively an inlet and outlet nozzle, a wrapper with a dome on the upper end thereof, the wrapper being disposed between the shell and the tube bundle and blocks which support and space the wrapper from the shell while the steam generator is vertically oriented in a containment vessel, said method comprising the steps of:

installing alignment clips on the enlarged portion of the shell bridging a circumferential line on which the shell is to be parted;

cutting, on said circumferential line, a groove all the way through the shell, the groove being cut to the configuration of a weld preparation for rewelding the shell back together;

removing the upper enlarged portion of the shell;

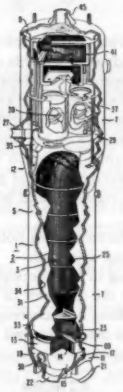
cutting the dome from the wrapper and removing it therefrom;

enclosing the upper end of the shell with a cask large enough to accept the tube bundle and wrapper and having a hoist for supporting and lifting the tube bundle;

cutting the blocks to free the wrapper from the shell;

cutting openings in the shell and wrapper above the tubesheet to provide access to the tube bundle adjacent the upper side of the tubesheet;

cutting the tubes above the tubesheet to free the tube bundle;



raising the tube bundle and wrapper into the cask;

sealing the lower end of the cask;

removing the cask, tube bundle and wrapper from the shell;

installing a remotely controlled tool in each chamber of the head, the remotely controlled tool being capable of performing various operations on the ends of all of the tubes and holes in the tubesheet;

cutting the seal welds between the tubes and tubesheet utilizing the remotely controlled tool;

removing the stub ends of the tubes from the tubesheet;

refurbishing the holes in the tubesheet;

installing a new wrapper and tube support system in the shell;

installing simultaneously one or more rows of tubes in the support system and tubesheet until all of the tubes are installed;

expanding at least a portion of the tubes into engagement with the holes in the tubesheet as they are installed therein;

seal welding the ends of the tubes to the tubesheet;

aligning the upper portion of the shell with the lower portion thereof;

welding the upper portion of the shell to the lower portion;

inspecting the weld joining the upper and lower portions of the shell;

heat treating the weld joining the upper and lower portions of the shell;

closing the holes cut in the shell above the tubesheet; and testing the shell hydrostatically.

4,270,259

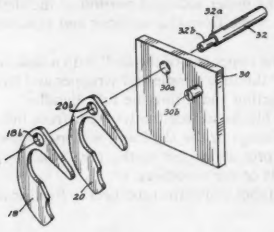
METHOD AND APPARATUS FOR REBUILDING ADVANCE WEIGHTS

Brian N. Tichy, Bloomington, and Robert E. Clark, New Germany, both of Minn., assignors to Thexton Manufacturing Company, Minneapolis, Minn.

Filed Mar. 15, 1979, Ser. No. 20,798

Int. Cl.[3] B23P *6/00, 19/04;* F02P *1/00;* B23B *49/00*

U.S. Cl. 29—402.06 8 Claims



1. Process for repairing a single deformed worn hole in each of a pair of identical advance weights of a distributor assembly of an automobile comprising the steps of:

a. establishing the location of the axis of the original round hole in each of the advance weights by initially supporting each weight on an unworn peripheral portion of the single hole and upon a round pin with a shape the same as the shape of said unworn peripheral portion, and aligning the two axes of the original round holes of the two weights with each other;

b. enlarging the deformed worn hole to an oversized round hole on the original axis; and,

c. inserting a bushing in the oversized hole having an inner diameter equal to the diameter of the original round hole whereby said bushing hole correspond in diameter and on axial center to the original round hole.

4,270,260

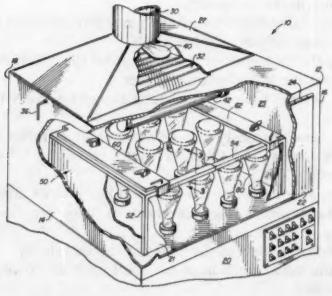
METHOD FOR THE SALVAGE AND RESTORATION OF INTEGRATED CIRCUITS FROM A SUBSTRATE

Ellison F. Krueger, 3916 Grand View, Tempe, Ariz. 85281

Filed Oct. 10, 1978, Ser. No. 949,763

Int. Cl.[3] B23Q *17/00*

U.S. Cl. 29—403.4 5 Claims



1. A salvage method for simultaneously desoldering a plurality of electronic components mounted on a substrate at solder joints such as a PCB, said method comprising:

(a) exposing at least a substantial portion of the surface of the PCB to bombardment by infra red energy to heat the board to a temperature appropriate to effect a substantially even temperature rise causing melting of the solder securing said components;

(b) controlling the temperature of the PCB by maintaining a controlled flow of air across a surface of the PCB; and

(c) thereafter removing the selected components from the board.

4,270,261

METHOD OF FORMING FIXING HEADS ON TENSION SPRINGS AND TENSION SPRINGS MANUFACTURED BY THIS METHOD

Johann Martin, Bielhausen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,524

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819700

Int. Cl.[3] B22D *19/00;* F16F *9/54*

U.S. Cl. 29—527.2 6 Claims

1. A method of forming a respective fixing head on an end each of two tension springs formed from a continuous coil of spring wire, comprising

expanding the coil over at least two turns at an area where two ends are to be formed, and

molding a mass of synthetic material about said at least two turns.

4. A chain of tension springs, each spring having a synthetic material fixing head enveloping the respective spring ends, adjoining ends of successive springs being interconnected by bridges of synthetic material, said fixing heads and bridges being molded over and between said spring ends.

4,270,262

SEMICONDUCTOR DEVICE AND PROCESS FOR MAKING THE SAME

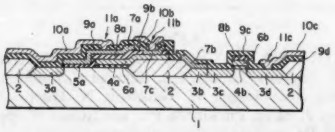
Ryoichi Hori, Tokyo; Masaharu Kubo, Hachioji; Norikazu Hashimoto, Tokorozawa; Shigeru Nishimatsu, Kokubunji, and Kiyoo Itoh, Higashi-kurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 23, 1978, Ser. No. 880,618

Claims priority, application Japan, Mar. 4, 1977, 52-22681

Int. Cl.[3] H01L *21/70, 21/90*

U.S. Cl. 29—571 15 Claims



1. A process for making a semiconductor device having at least two semiconductor circuit elements formed on a single semiconductor substrate, comprising:

(a) a step of forming a first conductivity type semiconductor substrate which contains a first conductivity type active impurity;

(b) a step of forming a first field-effect circuit element in the surface region of said semiconductor substrate,

said step including forming a first gate insulating layer in a first part of the surface region of said substrate forming a first gate electrode made of a first conductive layer on said first gate insulating layer, and forming a first inter-layer insulating layer on said first gate electrode;

(c) a step of providing a first penetrant opening in a first part of said first inter-layer insulating layer;

(d) a step of forming a second field-effect circuit element in the surface region of said semiconductor substrate, said step including forming a second gate insulating layer in a second part of the surface region of said substrate, forming a second gate electrode made of a second conductive layer so that a first part of said second gate electrode overlies said second gate insulating layer and a second part of said second gate electrode overlies a second part of said first inter-layer insulating layer different from said first part of said first inter-layer insulating layer;

(e) a step of inserting a subsidiary interconnection conductive layer into said first opening in a manner to be connected with said first electrode and to be isolated from said second electrode;

(f) a step of forming a second inter-layer insulating layer on said second electrode;

(g) a step of forming a third inter-layer insulating layer on said subsidiary interconnection conductive layer;

(h) a step of forming a second penetrant opening in said second inter-layer insulating layer;

(i) a step of forming a third penetrant opening in said third inter-layer insulating layer;

(j) a step of filling said second opening with a first interconnection conductor in a manner to be connected with said second electrode; and

(k) a step of filling said third opening with a second interconnection conductor in a manner to be connected with said subsidiary interconnection conductive layer.

4,270,263

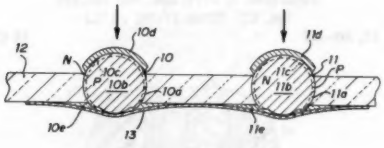
GLASS SUPPORT LIGHT ENERGY CONVERTER

Elwin L. Johnson; Jack S. Kilby, both of Dallas, Tex.; Jay W. Lathrop, Clemson, S.C.; John S. McFerren, Dallas, and David J. Myers, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 768,187, Feb. 14, 1977, Pat. No. 4,173,494. This application Aug. 10, 1978, Ser. No. 932,671

Int. Cl.³ H01L *7/24*

U.S. Cl. 29—590 **8 Claims**



1. The method of forming a distributed semiconductor unit which comprises:

(a) forming semiconductor particles of substantially uniform size, each having a central body portion inside a surface layer and a PN junction therebetween;

(b) casting said particles as a monolayer in a sheet of glass slurry of thickness corresponding to about the thickness of said particles;

(c) fusing said glass to rigidify the glass as a sheet with said particles distributed thereon with the surface layers of said particles exposed on one side of said sheet and the body portion exposed on the other side of said sheet; and

(d) applying a metal layer on one side of said sheet in contact with the body portion of each of said particles and isolated from the junction between said surface layer and said body portion.

4,270,264

METHOD FOR ESTABLISHING AN ELECTRICAL CONTACT BETWEEN A NORMALLY CONDUCTING CONTACT ELEMENT AND AT LEAST ONE SUPERCONDUCTOR

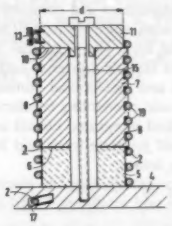
Hans-Jörg Weisse, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1979, Ser. No. 76,662

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 2840526

Int. Cl.³ H01V *11/00*

U.S. Cl. 29—599 **12 Claims**



1. A method for establishing an electrical contact in a magnet coil, between a contact body consisting of normally conducting material and the end section of at least one superconductor of an intermetallic compound which is formed by in situ appealing of an intermediate conductor product, comprising:

(a) placing the corresponding end section of the intermediate conductor product, prior to the anneal, on a form of heat resistant material which does not react with the elements of the intermediate conductor product during the anneal; and

(b) after the annealing, replacing the form with a contact body of corresponding shape.

4,270,265

METHOD OF MANUFACTURING HYBRID INTEGRATED CIRCUIT ASSEMBLIES

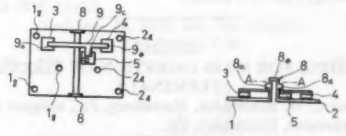
Yoshihiko Ikeda, Shizuoko, and Hiroyasu Nitou, Fuji, both of Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Mar. 19, 1979, Ser. No. 22,039

Claims priority, application Japan, Apr. 28, 1978, 53-50107

Int. Cl.³ H05K *3/34*

U.S. Cl. 29—840 **4 Claims**



1. A method of manufacturing a hybrid integrated circuit assembly wherein a plurality of electronic components are mounted on an electrically conductive mounting board and a connecting conductor means is disposed on the electronic components to electrically connect the electronic components to each other, comprising the steps of:

(a) interposing layers of solder between said mounting board and first electrodes respectively provided on first surfaces of said electronic components to be connected to said mounting board, and between second electrodes respec-

tively provided on second surfaces of said electronic components opposite to said first surfaces thereof and said connecting conductor means for connecting said second electrodes to each other, said mounting board comprising at least two relatively thin conductive and solderable plates and a coupling means for mechanically connecting said plates to each other;

(b) placing said electronic components between said mounting board and a jig plate for positioning said electronic components with respect to said mounting board and for positioning said connecting conductor means with respect to said electronic components, and placing said connecting conductor means between said electronic components and said jig plate;

(c) holding said electronic components and said connecting conductor means between said mounting board and said jig plate to form a semi-assembly of said mounting board, electronic components and connecting conductor means;

(d) heating said semi-assembly to melt said layers of solder to simultaneously form the electrical and mechanical connection of said first electrodes to said mounting board and the electrical and mechanical connection of said second electrodes to said connecting conductor means, to thereby form said hybrid integrated circuit assembly;

(e) removing said jig plate from said hybrid integrated circuit assembly; and

(f) cutting said coupling means to electrically and mechanically separate said mounting board into at least two sections.

4,270,266

METHOD OF MAKING A DIELECTRIC CONTAINING MATERIAL FOR RF SUPPRESSION

Ronald G. Lanzi, Mt. Clemens, and Peter Vernia, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 14, 1978, Ser. No. 942,425
Int. Cl.[3] H01R *43/00*
U.S. Cl. 29—875 **3 Claims**

1. A method of making a dielectric containing material for suppressing radio frequency interference when incorporated in a conductive metal distributor rotor electrode, said method comprising:

melting a mixture comprising by weight at least half copper oxide and a minor portion of silicon oxide;

thereafter chemically reducing said copper oxide to copper metal without reducing said silicon oxide, the fused material in its solid state then being characterized by a first phase of lacy structured dielectric silica bodies mechanically interlocked with a second phase of reduced copper metal; and

dispersing said fused material throughout a metal electrode such that the dielectric silica bodies comprise about 0.5 to 5 weight percent thereof.

4,270,267

MACHINE FOR MASS INSERTION OF ELECTRICAL TERMINALS

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 17, 1979, Ser. No. 39,933
Int. Cl.[3] H01R *43/00*
U.S. Cl. 29—881 **12 Claims**

1. An application machine for effecting mass insertion of electrical terminals into preformed apertures in housings, printed circuit boards, and the like in a closely spaced, high density array, the terminals each having one end adapted to form an interference fit in a respective preformed aperture and the other end detachably secured, to depend in two parallel spaced rows from a flexible carrier tape, said machine comprising:

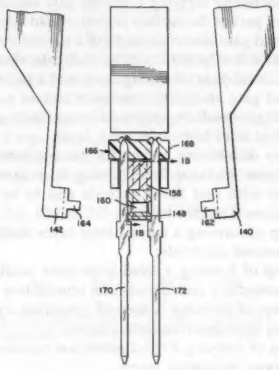
a substantially closed housing defining a cavity therein;

a first assembly slidably mounted within said cavity;

a second assembly slidably mounted concentrically within said first assembly;

a shuttle assembly having a fixed mandrel with a detachable shuttle member positioned within said cavity to lie between said rows of terminals;

a gripping assembly mounted in said second assembly for gripping each said row of terminals against an adjacent side of said shuttle member and releasing said terminals after insertion;



drive means for imparting reciprocal motion to said first and second assemblies and movement to said gripping assembly;

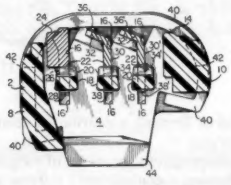
whereby said tape carried terminals are fed between said gripping assembly and an adjacent side of said shuttle assembly and grasped therebetween, stripped from said tape, transported to and inserted into said preformed apertures, and released by said gripping assembly which returns said shuttle member to its original position.

4,270,268

RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Dec. 7, 1979, Ser. No. 101,101
Int. Cl.[3] B26B *21/06, 21/22*
U.S. Cl. 30—47 **11 Claims**



1. A razor blade assembly comprising a body member, a guard member fixed to said body member for movement thereon, blade means mounted on said body member for movement thereon, said guard member and said blade means being independently moveable in response to forces encountered during a shaving operation, and spring finger biasing means integral with said body portion and exercising a bias against said guard member and said blade means.

4,270,269

COMBINATION PIPE-CUTTER AND DEBURRING TOOL

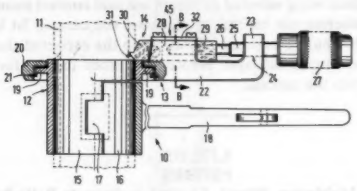
Manfred Weil, Frankfurt-Zeilsheim, and Günter Rothenberger, Bad Homburg, both of Fed. Rep. of Germany, assignors to Firma Rothenberg GmbH & Co., Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 29, 1979, Ser. No. 31,908

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 7811884[U]

Int. Cl.³ B23D *21/10*

U.S. Cl. 30—102 4 Claims



1. A pipe-cutter comprising: housing means positionable around a pipe to be cut, cutting means and spindle drive means having a grip handle for radially adjusting the cutting means in relation to the housing means, said grip handle being transversely divided, one part thereof facing the cutting means having a longitudinal bore, and the other part separable therefrom and comprising a manipulator for a deburring tool and having cranked scraper means rotatably mounted therein and telescopable into said bore together with at least part of the length of the manipulator.

4,270,270

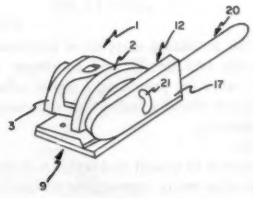
COMBINATION POWER SAW AND CHAIN SAW AND ADAPTER DEVICE AND METHODS OF MAKING AND USING THE SAME

Ellis R. Loyd, Rte. 2, Box 474A Shackelford Rd., Florissant, Mo. 63034

Continuation-in-part of Ser. No. 761,274, Jan. 21, 1977, Pat. No. 4,121,336. This application Oct. 23, 1978, Ser. No. 953,755

Int. Cl.³ B27B *17/00*

U.S. Cl. 30—122 3 Claims



1. A circular saw adapter to convert a circular saw provided with housing means, and motor means including a motor driven blade supporting shaft and a surface plate substantially parallel to said shaft into a chain saw, comprising,

frame means operably mounted to said surface plate, said frame means comprising,

plate means,

chain saw housing means mounted on said plate means, and provided with an aperture therein which when said plate is secured to said surface plate in a parallel relationship said aperture will be disposed in alignment with said shaft and said shaft will extend through said aperture, said housing provided with a removable frame plate which when mounted thereon forms a chain saw chamber within said frame means which communicates to the exterior through an opening in said frame means, said chain saw housing means provided with a bearing housing,

guide bar adjust means operably mounted on said frame plate

mounting means operably mounted on said shaft; said mounting means (operated) which is mounted on said shaft comprising bearing means provided with sprocket means mounted thereon,

securing means to secure said sprocket and mounting means to said shaft,

a chain saw guide bar operably mounted to said frame means, and

handle means.

4,270,271

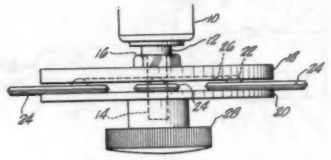
TRIMMING HEAD FOR VEGETATION

Robert I. Feldman, Agoura, and Dana F. Thesman, Torrance, both of Calif., assignors to Versatool, Inc., Encino, Calif.

Filed Aug. 13, 1979, Ser. No. 67,148

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 8 Claims



1. A trimming head for cutting vegetation, comprising

a first circular plate having a first circular surface and a center bore for attachment of said first circular plate to a rotary drive;

a second circular plate having a second circular surface and a center bore for attachment of said second circular plate to the rotary drive;

a plurality of pins positioned symmetrically about said first surface at a first radius from the center of said first circular surface;

receiving means recessed into said second surface for receiving said pins including a circular channel on said second surface at said first radius; and

blades pivotally mounted on said pins between said first and second surfaces.

4,270,272

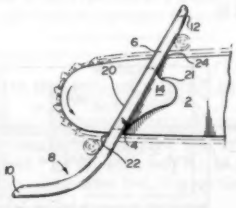
BRUSH CUTTING ATTACHMENT FOR CHAIN SAW

William W. Graham, 1755 Woodward Dr., Ottawa, Ontario, Canada (K2C OP9)

Filed Jan. 25, 1980, Ser. No. 115,354

Int. Cl.³ B27B *17/00*

U.S. Cl. 30—371 9 Claims



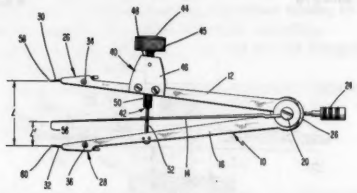
1. An attachment for a direct drive gasoline or electric powered chain saw comprising a rigid bar of round cross-section to be secured to the blade of the chain saw at a point

spaced a short distance towards the handle from the tip of the blade, the bar, when so secured substantially lying in a plane parallel to the plane of the blade and having a straight portion traversing the blade at an angle to the longitudinal axis of the blade forwardly and downwardly extending with respect thereto and projecting upwardly and rearwardly in a straight line beyond the upper edge of the blade; the bar having another portion projecting beyond the lower edge of the blade, this other portion being gradually curved through an arc ending in an direction substantially parallel to the longitudinal axis of the blade slightly forwardly of the blade, and means positioned on the bar substantially centrally between its ends to secure the bar to the blade.

4,270,273
MEASURING INSTRUMENT

Brian E. Berger, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Oct. 30, 1979, Ser. No. 89,297
Int. Cl.[3] B43L *9/08*
U.S. Cl. 33—150 **6 Claims**

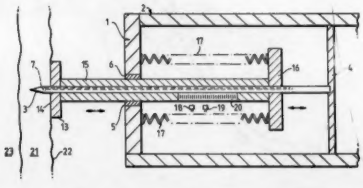


1. A measuring instrument comprising first and second outer legs, a single intermediate leg disposed therebetween, said outer legs being arranged to pivot about a common axis to enable the distance between outer ends thereof to be manually varied, means for preventing movement of said intermediate leg in a direction parallel to the common pivot axis of said outer legs, proportioning means for maintaining an outer end of said intermediate leg at a constant ratio of the distance between said outer legs, said proportioning means including a manual adjusting screw having a first end rotatably supported by one of the outer legs and having a first section threadedly connected to the other of said outer legs to vary the distance between said outer legs upon being rotated, and a second section threadedly engaging said intermediate leg, the pitch of said first section being different from that of said second section and the ratio between the pitches being the same as said constant ratio.

4,270,274
ANIMAL FAT INDICATOR

John B. Hennessy, Ahuroa, North Auckland, New Zealand

Filed Feb. 15, 1980, Ser. No. 122,069
Claims priority, application New Zealand, Feb. 16, 1979, 189675
Int. Cl.[3] G01B *5/02, 11/06*
U.S. Cl. 33—169 B **7 Claims**

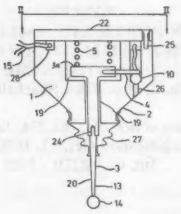


1. An indicator for measureing the fat layer depth of an animal carcass comprising a base, a probe, means fixedly securing said probe with respect to said base, said probe extending from said base and insertable into an animal carcass, a first reference point defined as part of said probe and disposed proximate the probe and remote from said base, a contact member having defined thereon a second reference point, display means for providing an indication of the distance between said first and second reference points, and elastic means connected between said base and said contact member for elastically opposing increased separation of said first and second reference points, said contact member being positioned to contact said animal carcass upon insertion of said probe into said carcass to a predetermined depth, the elasticity of said elastic means being selected so that in use said contact member, upon contacting the carcass, compresses the carcass fat layer to a depth which is substantially equal to the expected shrinkage of the carcass fat layer before said probe can be further inserted into the carcass.

4,270,275
PROBES

David R. McMurtry, Bristol, England, assignor to Rolls-Royce Limited, London, England

Continuation of Ser. No. 739,139, Nov. 5, 1976, Pat. No. 4,153,998, which is a continuation of Ser. No. 550,634, Feb. 18, 1975, abandoned, which is a continuation of Ser. No. 398,831, Sep. 19, 1973, abandoned. This application Apr. 18, 1979, Ser. No. 31,149
Claims priority, application United Kingdom, Sep. 21, 1972, 43659/72; Jun. 14, 1973, 28260/73; Aug. 3, 1973, 37067/73
The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.
Int. Cl.[3] G01B *7/28*
U.S. Cl. 33—174 L **5 Claims**



1. A device for mounting a stylus in position-determining apparatus wherein said device and an object are movable relative to each other for providing a signal when said stylus engages said object thereby indicating the position thereof, said device comprising:

a fixed member,

a movable member to which said stylus is connectable, said movable member being supportable on said fixed member at a plurality of spaced-apart locations, one of the movable and fixed members having at each of said locations a pair of mutually convergent surfaces and the other one of said members being engageable with said convergent surfaces,

bias means for urging said movable member into contact with said fixed member so that all of said convergent surfaces are engaged thereby positively defining a rest position for said movable member, said movable member being removed from said rest position in opposition to said bias means when a force is applied to said stylus, said bias means and convergent surfaces cooperating, on cessation of said force, to return said movable member to said rest position, and

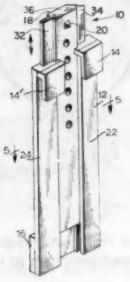
means for providing said signal when said stylus engages the object.

4,270,276

METAL WORKING TOOL

Martin C. Skura, 7206 Forest Blvd., North Lauderdale, Fla. 33068

Filed Oct. 17, 1979, Ser. No. 85,690
Int. Cl.[3] G01B 5/14; B23B 49/02
U.S. Cl. 33—189 3 Claims



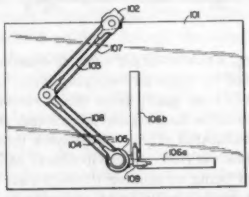
1. A workpiece layout tool for locating points or a workpiece for marking, comprising:
a slide housing;
a slide bar moveably mounted within said slide housing such that said slide bar can be moved in longitudinal relation to said slide housing, said slide bar having a plurality of marking apertures disposed therethrough in a predetermined spaced apart relationship;
a workpiece engaging means connected to said housing in a constant, relative position with said workpiece,
said workpiece engaging means including two L-shaped lips fixed to the outer end of said housing, sized for slidably receiving said workpiece.

4,270,277

UNIVERSAL PARALLEL RULER WITH CONVERTED DISPLAY OF DISPLACEMENT

Masao Koenuma, Tokyo, Japan, assignor to Asahi Seimitsu Kabushiki Kaisha, Tokyo-to, Japan

Division of Ser. No. 28,353, Apr. 9, 1979, Pat. No. 4,221,056. This application Dec. 19, 1979, Ser. No. 105,140
Claims priority, application Japan, Apr. 12, 1978, 53-42022; May 1, 1978, 53-52482
Int. Cl.[3] B43L 13/02
U.S. Cl. 33—439 3 Claims



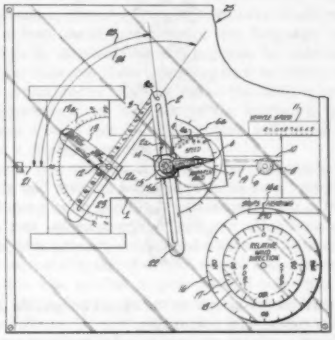
1. An arm type universal parallel ruler with a converted display of displacement and having a first base fixed to a drawing board, a first arm rotatably supported at one end by said first base, a second base mounted on the opposite end of said first arm and connected by a translation mechanism to said first base, a second arm rotatably supported at one end by said second base, a head mounted on the opposite end of said second arm and connected by a translation mechanism to said second base and scales rotatably and fixably mounted on said head so that said scales may be displaced in a parallel fashion on the drawing board, said universal parallel ruler comprising:
a first reader means for reading a rotation angle θ_1 of the first arm relative to one of said bases; a second reader means for reading a rotation angle θ_2 of the second arm relative to the second base and the head;
a third reader means for reading a tilt angle θ of the scales relative to the head;
an arithmetic unit means for determining a parallel displacement amount of the scales based on the rotation angles θ_1, θ_2 and the tilt angle θ read by said reader means; and
display means for displaying the parallel displacement amount of the scales in a digital manner.

4,270,278

WIND VECTOR RESOLUTION DEVICE

Robert G. Metzner, 916 N. Foothill, Beverly Hills, Calif. 90210

Continuation of Ser. No. 901,594, May 1, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,778
Int. Cl.[3] B43L 7/06
U.S. Cl. 33—457 5 Claims



1. A vector resolution apparatus for resolving a known apparent wind velocity vector and a known vehicle velocity vector into a true wind velocity vector, comprising
a frame;
a block assembly mounted to said frame for linear translational movement relative to said frame, said block and frame being calibrated such that the position of said block on said frame represents vehicle speed;
an adjustable engagement means on said block and frame for adjustment and retention of the position of said block relative to said frame and including a vehicle speed knob fixed to said adjustable engagement means for effecting said adjustment;
a guide member rotatably mounted to said frame;
a rack carrier slidably mounted to said guide member for linear translational movement and rotational movement relative to said frame to represent the apparent wind vector; and
a graduated member pinned at a first point to said rack carrier and slidably pinned at a distance from said first point to said block to represent the true wind vector.

4,270,279

METHOD FOR DRYING AND STERILIZING SEWAGE SLUDGE

Hanns E. Roediger, Stuttgart, Fed. Rep. of Germany, assignor to Techtransfer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,266
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850607
Int. Cl.[3] F26B 3/00, 7/00
U.S. Cl. 34—9 6 Claims

1. A method of sterilizing and further dehydrating a sheet of partially dehydrated sewage sludge having a solid matter con-

tent in the range of 15 to 35%, said method comprising only the steps of breaking up the sludge sheet into particles and then dusting only the surfaces of the particles with quicklime to form a granular fertilizer product which can be scattered by conventional fertilizer spreader, said method being carried out without any external heating.

4,270,280

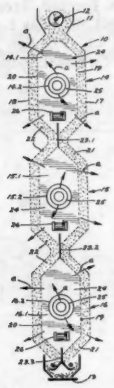
RICE DRYING MACHINE

Jay L. McClaren, Dassel, Minn. 55325

Filed Feb. 26, 1979, Ser. No. 14,928

Int. Cl.³ F26B *3/06*

U.S. Cl. 34—30 **19 Claims**



1. A method drying rice or the like to be suitable for storing or further processing, comprising,

confining a quantity of the rice in a chamber through which air may be passed,

heating and pressurizing air at one side of the chamber and causing the heated air to once pass through the entire quantity of confined rice in the chamber, and

sensing the wet bulb temperature of the air prior to passing the air through the chamber, and

sensing the dry bulb temperature of the air prior to passing the air through the chamber and comparing the dry bulb temperature of the air with the wet bulb temperature of the air, and regulating the heating of the air to maintain a predetermined differential between the dry bulb and wet bulb temperatures of the air.

4,270,281

COMBINED DRUM WASHER AND DRYING ARRANGEMENT

Franz Müller, Troisdorf, Fed. Rep. of Germany, assignor to August Lepper Maschinen- und Apparatebau GmbH, Bad Honnef, Fed. Rep. of Germany

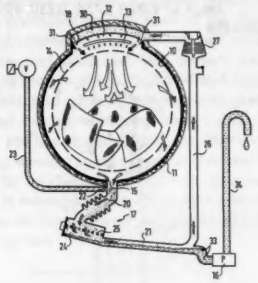
Filed Dec. 3, 1979, Ser. No. 99,752

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852449

Int. Cl.³ F26B *11/04*

U.S. Cl. 34—75 **6 Claims**

1. A drum-type washing and drying machine having a heating element fitted in the upper part of a washing liquid container in a recess in front of a reflector so as to provide for direct irradiation of a washing-drum mounted within the container; a circulating-air conduit extending between a drain-opening in the bottom of the container and a heat exchange space situated above said reflector, said circulating air conduit including a suction-pressure-impeller, the pressure side of which opens into said heat-exchange space; a condenser adapted to be supplied with cold water; said heat-exchange space being connected with the washing liquid container by way of circulating-air nozzles at the edge of the reflector, said nozzles serving to conduct circulating-air in the form of an air curtain obliquely inwards onto the exterior of the washing-



drum in such a way that the circulating-air essentially flows into the interior of the washing-drum in the region under the reflector.

4,270,282

HOUSED CLOTHES DRYER

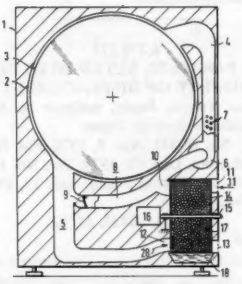
Helmut Lotz, Giengen, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,230

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751284

Int. Cl.³ F26B *11/04*

U.S. Cl. 34—86 **13 Claims**



1. In a housing, a clothes dryer wherein dampness in washed clothes is expelled by warm air sweeping therethrough, the air being drawn in at least partly from the environment through openings formed in the housing and heated and, after absorbing the dampness, exhausted at least partly back into the environment, the air drawn in from the environment and exhausted to the environment being conducted through two channels of a heat exchanger with a solid-body regenerator alternatingly contacted in part by the drawn-in air and the exhausted air, the improvement therein comprising non-hygroscopic storage material received in the regenerator and absorbing thermal energy as loss-free as possible, storing the absorbed thermal energy as loss-free as possible and subsequently surrendering the thermal energy as loss-free as possible, the regenerator being air-permeable in axial direction thereof and being mounted in the drawn-in and exhausted air channels for rotation in a manner that every region of the regenerator is alternatingly introduced into the drawn-in air channel and into the exhaust air channel during the rotation, the regenerator comprising an air-permeable array of metal sheets disposed in axial

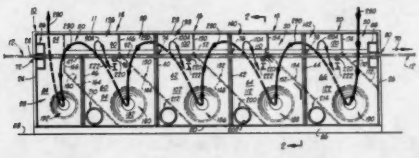
direction of the regenerator and held substantially radially symmetrically in a hollow cylinder, said metal sheets being formed of a helical sheetmetal coil having winding cross sections disposed at an angle to the axis of the regenerator.

4,270,283

AIR RECYCLING APPARATUS FOR DRYING A TEXTILE WEB

James F. Ellis, P.O. Box 21160, Chattanooga, Tenn. 37421

Filed Jan. 10, 1979, Ser. No. 2,443
Int. Cl.³ F26B *13/02, 21/04*
U.S. Cl. 34—212 **17 Claims**



1. An air recycling dryer apparatus for removing entrained moisture from a porous carpet web, the dryer apparatus comprising:

a first housing assembly defining a first drying region, the first housing assembly having a carpet web entry opening and a carpet web exit opening such that the carpet web can travel through the first drying region of the first housing assembly, the carpet web traveling through the first housing assembly dividing the first drying region into a first zone on a first side of the carpet web and into a second zone on a second side of the carpet web;

a second housing assembly defining a second drying region, the second housing assembly having a carpet web entry opening and a carpet web exit opening such that the carpet web exiting the first drying region of the first housing assembly can travel through the second drying region of the second housing assembly, the carpet web traveling through the second housing assembly dividing the second drying region into a first zone on the first side of the carpet web and into a second zone on the second side of the carpet web;

first air means for maintaining a differential fluid pressure across the carpet web between the first and second zones of the first drying region of the first housing assembly to establish air flow through the carpet web traveling through the first drying region;

second air means for maintaining a differential fluid pressure across the carpet web between the first and second zones of the second drying region of the second housing assembly to establish air flow through the carpet web traveling through the second drying region;

first air flow channel means interconnecting the first and second housing assemblies such that the second zone of the second drying region of the second housing assembly is in fluid communication with the first zone of the first drying region, the first air flow channel dividing the air flow from the second air means such that a portion of the air flow in the second housing assembly is passed to the first zone of the first housing assembly and a portion of the air flow of the second air means passes through the carpet web traveling through the second drying region of the second housing assembly;

first heater means for heating the air in the second drying region;

air inlet means providing fluid communication to the first zone of the second drying region for supplying inlet air thereto; and

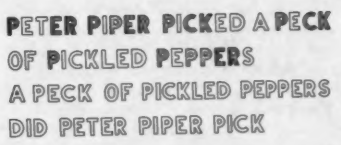
exhaust conduit means providing fluid communication from the second zone of the first drying region for exhausting air therefrom.

4,270,284

COLOR LANGUAGE TEACHING METHOD AND DISPLAY AND PROCESS FOR CREATING THE DISPLAY

Edmund Skellings, 600 NE. 2nd Pl., Dania, Fla. 33004

Filed Sep. 19, 1978, Ser. No. 943,687
Int. Cl.³ G09B *17/00*
U.S. Cl. 434—156 **8 Claims**



1. A cathode ray tube generated graphic material display using at least one color pair assignment of portions of the material for teaching at least one of the following: linguistic, literary, semantic, related and stylistic features of said material including at least one of the following: text, language, symbols and numbers by emphasizing said portions by coloring said portions of at least one of the following such as indicia, words, grammar, syntax, meter, rhythm, and poetic devices by use of color assignments on at least one of the following: material indicia, aura around indicia, block around indicia, and background on a display comprising:

(a) at least one cathode ray tube generated display frame having said material and said portions on a background,

(b) said material on said display frame including at least one color pair assignment in at least one color from the red, green, blue primary colors, and combinations thereof,

(c) said material including at least two of said portions color paired to one another to provide said color pair assignment, said color pair assignment emphasized by a similar color different from the other portions of said material and background to display at least one of the following features of said material; linguistic, literary, semantic, related and stylistic features,

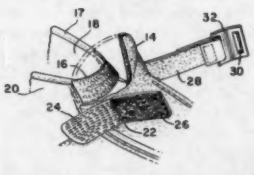
(d) each said portion colored to include at least one of the following areas: indicia, aura, block, and background portions of the display, whereby the display in a single frame with the color pair assignments provides for better display of linguistic feature of said material, literary feature of said material, semantic feature of said material, related feature of said material or stylistic features of said material by comparatively identifying heretofore subliminal patterns.

4,270,285

ADJUSTABLE AND FLEXIBLE SHOE CLOSURE ASSEMBLY AND ELASTIC GORE

Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Jan. 8, 1979, Ser. No. 1,737
Int. Cl.³ A43B *11/00*
U.S. Cl. 36—50 **32 Claims**



1. A shoe with a sole and uppers including a vamp and quarters having a collar utilizing elastic gore means connecting said quarters at the frontal collar position in combination with

an adjustable and flexible closure assembly which overlays both the instep portion and the upper vamp of the shoe, said closure assembly comprising:

a flexible, multi-adjustable, separable fastener means having first and second fastening members including arrays of complementary, coacting, flexible gripping elements for securing said closure assembly;

a fastener strap secured to said uppers on one side of said shoe, said fastener strap having a fixed portion and a free end, said free end including said first fastening member, said second fastening member positioned adjacent said fixed portion of said fastener strap; and

an anchor strap secured to said uppers on the opposite side of said shoe, said anchor strap having a free end with an opening through which said free end of said fastener strap passes permitting adjustment to the precise desired tautness of said closure assembly to fasten said shoe.

4,270,286

TOOL SUSPENSION WITH SUPPLY MEANS FOR HYDRAULIC MEDIUM

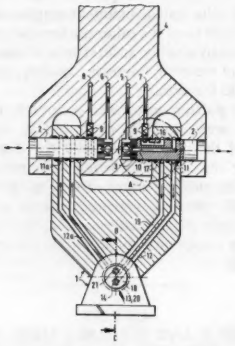
Rolf Mieger, Kirchdorf-Iller, Fed. Rep. of Germany, assignor to Liebherr-Hydraulikbagger GmbH, Kirchdorf, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,968

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856556

Int. Cl.[3] **E03B** *3/00*

U.S. Cl. 37—103 **2 Claims**



1. A tool suspension for hydraulically operable replaceable tools on a tool shaft of a hydraulic excavator or crane, said suspension comprising a supply of hydraulic medium, wherein coupling is effected by introducing a pivotable fork member in a connecting member of the tool shaft and the pivotable connection of the fork is by means of pins, characterised in that the pressure medium can be fed to the tool through a supply comprising a pressure conduit (**5**) in the connecting member (**4**) of the tool shaft, a valve (**3**) operable in response to displacement of the pin (**2**) of the connecting member, a longitudinal bore (**10**) in the pin (**2**) communicating with an annular passage (**11**) in the aperture of the fork (**1**) receiving the pin (**2**) of the connecting member (**4**), a bore (**12**) in the fork (**1**), an annular passage (**13**) in the aperture for the pin (**18**) for pivotably attaching the tool, and a bore with orifice (**14**) in the pin (**18**) of the tool, and can be discharged to a collecting tank through an outlet comprising an orifice (**14***a*) in the pin (**18**) of the tool, appropriate bores and annular passages, and a conduit (**6**).

4,270,287

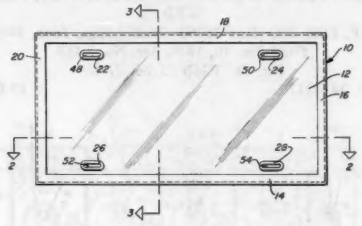
FRAMED PICTURE HOLDER

R. Keith Gimbel, 456 Parlin St., Philadelphia, Pa. 19116

Filed Jan. 4, 1979, Ser. No. 971

Int. Cl.[3] **G09F** *01/12*

U.S. Cl. 40—152 **9 Claims**



1. In a picture holder, the combination of

a first cover of water-resistant, relatively stiff, clear material, the first cover being provided with a first mounting opening therethrough;

a second cover of water-resistant material in registry with the first cover,

the first and second covers being of the same size and configuration,

the second cover being provided with a second mounting opening, the second mounting opening being in registry with the first mounting opening;

peripheral frame peripherally joining the first and second covers;

first means for sealing the peripheral junction of the first and second covers, said first means for sealing is within the peripheral frame and is water resistant; and

second means for sealing the periphery of the registered first and second mounting openings to prevent the entrance of moisture into the area defined between the first and second covers, said second means for sealing is water resistant,

the second means for sealing comprising a hollow, resilient, water resistant grommet, the grommet lining the periphery of the first and second mounting openings, the hollow portion of the grommet defining a mounting opening therethrough.

4,270,288

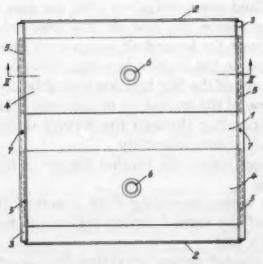
PICTURE FRAMES

Ernst Sulzer, Obere Geerenstrasse 48, 8044 Geeren, Kt. Zürich, Switzerland

Continuation of Ser. No. 862,876, Dec. 21, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,634

Int. Cl.[3] **G09F** *1/12*

U.S. Cl. 40—156 **1 Claim**



1. A picture frame comprising:

(a) a transparent substantially rigid synthetic frame plate of one thickness having an inside surface against which a picture to be framed is locatable, said frame plate comprises an arcuate surface for the support of said picture,

(b) angle pieces disposed along two mutually remote sides of said frame plate and formed integrally therewith, said angle pieces extending at the inside surface and inclining towards each other in the extending direction, said frame plate has two further mutually remote sides and has stiffening means comprising further edge angled pieces integral with said frame plate on said two mutually remote sides, the angled pieces of the frame plate include with the frame plate an acute angle of approximately 70°,

(c) a flexible clamping plate of a thickness substantially less than the thickness of the frame plate having an area substantially less than the area of the frame plate and having a length just shorter than the distance between said angle pieces so as to permit location of said clamping plate between said angle pieces, stiffening means on said clamping plate extending longitudinally therealong, whereby in the unassembled condition of the frame the clamping plate resides in an arcuate form said further angle pieces of said clamping plate include an angle of approximately 70°, and

(d) further angle pieces extending along the ends of said clamping plate and formed integrally with said clamping plate, said further angle pieces extending at an exterior surface of said clamping plate and inclining towards each other in the extending direction,

wherein upon entry of the clamping plate into the frame plate the clamping plate is depressed by the user substantially in a direction perpendicular to the frame plate whereupon as the clamping plate enters the frame plate the clamping plate temporarily deforms into a curved shape and after entry assumes a position lying adjacent the frame plate, with the picture disposed between said frame plate and clamping plate, and with said further angle pieces of said clamping plate engaging the angle pieces of said frame plate, said clamping plate being removable from said frame plate by finger force acting substantially perpendicular to the frame plate to once again temporarily deform the clamping plate.

4,270,289

CARD HOLDER

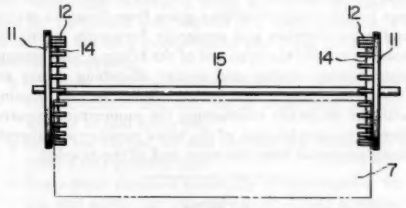
Yoshimi Kimura, Nagareyama, Japan, assignor to Kabushiki Kaisha Fuji Seisakusho, Nagaretana, Japan

Filed Dec. 13, 1979, Ser. No. 103,240

Claims priority, application Japan, Dec. 18, 1978, 53-172148[U]; Jun. 30, 1979, 54-90440[U]

Int. Cl.³ G09F *11/08*

U.S. Cl. 40—379 **4 Claims**



1. In a card holder for a rotary type information retrieving device, wherein a plurality of information-containing card cases are hangingly supported between a pair of mutually spaced rotary discs, a combination which comprises:

(a) a plurality of pins arranged on one surface of each of said pair of rotary discs around the circumference thereof and at an equal space interval provided among them;

(b) a concentric raised part provided on the same surface of said pair of rotary discs at a position inward of said train of pins; and

(c) a plurality of information-containing card cases, each being formed by folding a single sheet of film material into a folder shape with the bent portion being made a pin insertion engagement part so that each of said card cases may be hangingly supported between said pair of rotary discs by said oppositely arranged pins on the circumference of said discs, one of said folded flaps of said card case being further bent at its edge opposite to said bent portion toward the other flap to constitute a slip-preventive section for the information card inserted between the two folded flaps of said card case.

4,270,290

REVOLVING SELF-SERVICE DISPLAY STAND

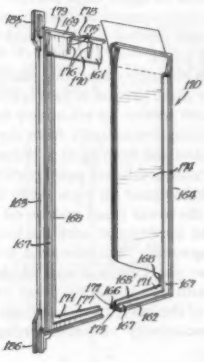
Ronald P. Eckert, Northbrook, Ill., assignor to DLM, Inc., Niles, Ill.

Continuation-in-part of Ser. No. 703,958, Jul. 9, 1976, Pat. No. 4,102,069. This application Jun. 26, 1978, Ser. No. 919,235

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.³ B42F *17/20*; G09F *11/02*

U.S. Cl. 40—389 **2 Claims**



1. A frame for holding a plurality of flexible display panels comprising a molded plastic outer frame having on three sides thereof an inwardly opening channel which is C-shaped in cross section, the fourth side of the frame having a T-shape in cross section with the leg of the "T" projecting inwardly toward the center of the frame, a divider molded integrally with the back of the C-shaped channel and projecting inwardly from between the two legs of the C-shaped channel, said divider joining with said leg of the "T" to divide the frame into two pockets with several of said flexible display panels being capable of being nested in each of said pockets, a cut out notch formed in at least one side edge of the head of the "T" to expose the outer edges of the plurality of flexible display panels in said adjacent pocket, and guide means extending between the head of the "T" and the leg of the "T," said outermost flexible display panel may be grasped through said cut out notch and peeled forward and guided out of said adjacent pocket.

4,270,291

SIGN CONSTRUCTION

Marion G. Babberl, San Mateo, Calif., assignor to Rapid Mounting & Finishing Company, Chicago, Ill.

Filed May 14, 1980, Ser. No. 149,677
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—594 **14 Claims**

1. For use with a light-transmitting windowpane, a sign construction comprising:

a mounting panel having a front face, a rear face, and a lower edge portion;

holding means on the front face for holding the panel with the front face in facial juxtaposition to a windowpane and with the lower edge portion lowermost;

a selective information-conveying sign structure including an upper panel portion and a lower panel portion, the upper panel portion having a front face, a rear face, a lower edge portion, and an upper edge portion, the lower panel portion having a front face, a rear face, a lower edge portion, and an upper edge portion;

connecting means connecting said upper edge portion of the upper panel portion to said lower edge portion of the mounting panel;

hinge means hingedly connecting said upper edge portion of the lower panel portion to said lower edge portion of the upper panel portion for selectively (a) hanging said lower panel portion downwardly from the upper panel portion so as to have said front faces of the mounting panel, upper panel portion, and lower panel portion facially juxtaposed to the windowpane for viewability therethrough, and (b) carrying the lower panel portion on said lower edge portion of the upper panel with the lower panel portion extending upwardly therefrom so as to be disposed between said upper panel portion and windowpane substantially aligned with said mounting panel and so as to have said rear face of the lower panel and front face of the mounting panel concurrently viewable through the windowpane; and

information-conveying means on a plurality of said faces.

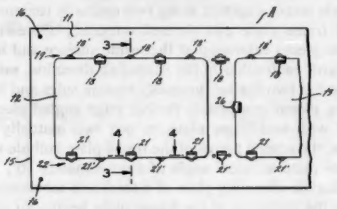
4,270,292

SIGN WITH CHANGEABLE INSERTS

Keith S. Eckberg, II, St. Louis County, Mo., assignor to Stout Industries, Inc., St. Louis, Mo.

Filed Apr. 7, 1980, Ser. No. 138,227
Int. Cl.³ G09F *7/02*
U.S. Cl. 40—611 **10 Claims**

1. A sign for carrying changeable inserts, said sign comprising a metal base plate of resilient materials, a plurality of clips formed in said base plate for gripping engagement of an insert of sheet material to carry said insert upon a surface of said base plate, characterized by said clips each comprising a tab integrally formed with said base plate and extending above said surface and opening onto said surface, said tab resiliently bearing against portions of said insert sheet material for gripping engagement of said insert, said tab being joined to said base plate by a zone of merger having compound curvature for nonlinear distribution of bending forces upon bending, of said tab, said base sheet comprising first and second circular protrusions located on opposite sides of each said tab for coacting



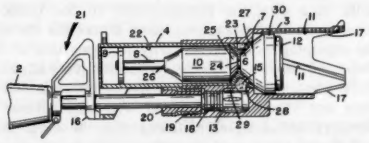
with said tab to deform the margin of said insert sheet material for more secure engagement thereof.

4,270,293

DEVICE FOR LAUNCHING NON-LETHAL RING AIRFOIL PROJECTILES

Roy D. Plumer, Santa Barbara, Calif., and Donald N. Olson, Lutherville, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 5, 1979, Ser. No. 27,438
Int. Cl.³ F41C *27/06*
U.S. Cl. 42—1 F **10 Claims**



1. A device for launching annular projectiles, which device is attachable to a rifle for firing with a blank cartridge, comprising:

a housing having an opening at one end thereof;

a sabot member open at one end and defining an annular recess for receiving the annular projectile substantially flushly thereinto, the sabot member being received within the housing, with the open end of said sabot member facing the open end of the housing;

a piston rod mounted at one end thereof to a closed rear portion of the sabot member, the piston rod extending longitudinally within the housing;

a pressure plate connected to the opposite end of the piston rod; energy absorbing means for said pressure plate; and

means for directing expanding gases from firing to project said sabot member and projectile forwardly within the housing toward the open end of the housing, said pressure plate bearing against said energy absorbing means and thereby cushioning said sabot member in said housing, with the projectile maintaining the momentum imparted thereto on acceleration of the sabot member and thereby being projected from the open end of the housing.

4,270,294

FIREARMS

Robert Compton, 5355 Atlantic, San Angelo, Tex. 76901

Filed Apr. 2, 1979, Ser. No. 26,009
Int. Cl.³ F41C *11/04*
U.S. Cl. 42—24 **17 Claims**

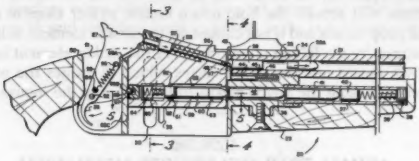
1. A firearm comprising:

a barrel;

a vertically slidable block mounted behind said barrel, said block having a firing pin mounted in the upper portion

thereof, and further havng at least one cylindrical cartridge holding chamber in the lower portion thereof;

a vertically oriented slide for holding said slidable block against horizontal movement while permitting selective vertical movement of the block between an intermediate position in which said firing pin is generally aligned with



said barrel, an upper position in which said cartridge-holding chamber is aligned with said barrel, and a lower position in which said block is below the end of said barrel;

hammer means positioned behind said slide; and

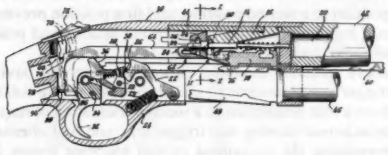
spent cartridge ejector means mounted on said slide adjacent the rear end of said barrel, but forward of said slidable block.

4,270,295

FIRING-PIN BLOCKING DEVICE FOR FIREARMS

William H. Grehl, Wallingford, Conn., assignor to O. F. Mossberg & Sons, Inc., North Haven, Conn.

Filed Aug. 20, 1979, Ser. No. 67,951
Int. Cl.³ F41C *17/04*
U.S. Cl. 42—70 F **6 Claims**



1. In a firearm having a receiver, a breech-bolt for reciprocation within said receiver, a firing pin carried by said breech-bolt for movement into and out of a firing position, a safety device for blocking movement of said firing pin into its firing position comprising,

a firing-pin blocking member mounted on the breech-bolt for movement into and out of a blocking position with respect to said firing pin,

a safety bar carried by said receiver for movement to and from a safe position and

a finger-piece disposed externally of said receiver for moving said safety bar into and out of its safe position,

said safety bar having an actuating portion disposed for engagement with said blocking member when said breech-bolt is in battery, such that when said safety bar is in its safe position said blocking member is positively held thereby in blocking relationship with said firing pin,

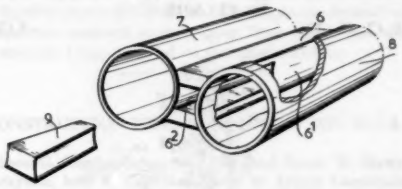
said actuating portion of said safety bar being adapted and arranged to cooperate with said breech-bolt and with said firing-pin blocking member to allow reciprocation of said breech-bolt.

4,270,296

POINT OF IMPACT ADJUSTMENT MEANS FOR FIREARM BARRELS

Paul Chapuis, rue de la Châtelaine, 42380 Saint Bonnet le Chateau, Loire, France

Filed Dec. 15, 1978, Ser. No. 969,999
Claims priority, application France, Dec. 29, 1977, 77 39942
Int. Cl.³ F41C *21/08*
U.S. Cl. 42—76 R **7 Claims**



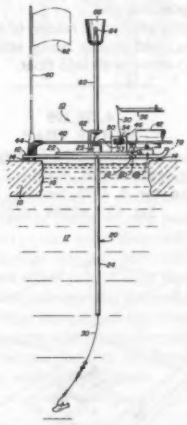
1. A profiled band for sporting guns having barrel tubes, allowing accurate adjustment of the barrel tubes, characterized in that the band extends along the entire length of the barrel tubes with a longitudinally flattened and profiled section, and is provided along its lateral faces with symmetrical recesses to be centered and fitted in the external profile of the barrel tubes and between the barrel tubes along the common horizontal axis thereof, the band being recessed axially and transversely at the front end to allow by its opening the engagement and the adjustment of the barrel tubes.

4,270,297

APPARATUS FOR ICE FISHING

Lance W. Yates, 6006 W. 29th St., Cicero, Ill. 60650

Filed Mar. 28, 1980, Ser. No. 134,934
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—4 **12 Claims**



1. Apparatus for use in fishing through a hole cut in a layer of ice overlying a body of water, comprising

an elongated, narrow tube having openings at the top and bottom thereof,

a fish line extending through said tube,

said tube containing a liquid having a specific gravity and a freezing point substantially below the specific gravity and freezing points of said water, and

support means supported by said layer of ice for holding said

tube in said hole with the lower end submerged in said body of water and said upper end disposed above the surface of the water in said hole.

4,270,298

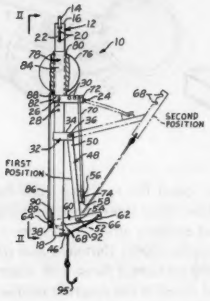
FISHING APPARATUS

Vincent B. Hodshire, 2701 NE. Adams St., Peoria, Ill. 61603

Continuation-in-part of Ser. No. 930,875, Aug. 3, 1978, abandoned. This application Jul. 6, 1979, Ser. No. 55,494

Int. Cl.[3] A01K *97/00*

U.S. Cl. 43—15 **5 Claims**



1. A fishing apparatus comprising:
a main support member;
a first member connected to said main support and movable between first and second positions;
a trigger member connected to said first member;
means for retaining said trigger and said first member in said first position;
means for resiliently urging said trigger and said first member toward said second position;
a float connected for movement between a gravity position and a float position; and
means for limiting premature release of said trigger from said first position, said means being substantially rigid and connected to move with said float.

4,270,299

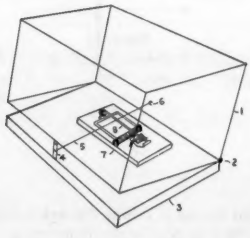
MOUSE TRAP

Alvin L. Long, Long Ranch, Yuba County, Calif., assignor to Loring C. Long, Beale A.F.B., Calif.

Filed Apr. 5, 1979, Ser. No. 27,315

Int. Cl.[3] A01M *1/10*

U.S. Cl. 43—58 **8 Claims**



1. A mouse trap comprising; a spring urged pivotal striker element; striker element hold down means; bait holder means releasably attached to said hold down for actuating the pivotal striker element; cover means for covering the striker element, said hold down means and bait holder means and the surrounding vicinity; releasable prop means for holding at least a portion of the cover means above the surface upon which the cover means is set; string means attached at one end to the prop means and at the other end to a surface of the cover on the far side of the striker element opposite the prop means, the string means being strung across the striker element and in the pivotal path thereof, such that a mouse upon entering the area beneath the propped cover means and upon disturbing the bait holder means will actuate the hold down means; striker element and the prop means and if not caught by the striker element will be trapped by the falling cover means as the striker element hold down means hits the string means which dislodges the prop means causing the cover means to fall and trap the mouse.

4,270,300

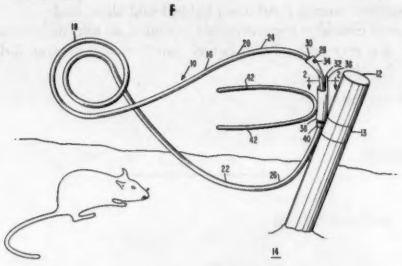
ANIMAL TRAP AND TRIGGER MECHANISM

Daryl A. Schultz, R.R. 2, Box 92-A, Rensselaer, Ind. 47979

Filed Sep. 28, 1979, Ser. No. 79,732

Int. Cl.[3] A01M *23/24*

U.S. Cl. 43—82 **13 Claims**



1. An animal trap comprising:
first and second legs each having first and second ends,
spring means proximate said first ends of said first and second legs for urging said legs together,
a blocking means capable of maintaining said legs in spaced apart relation, wherein said blocking means is mounted on said second end of said first leg and is movable from a first position to a second position, said first position preventing said legs from moving together and said second position allowing such movement, and
a sleeve rotatably mounted on said first leg and having a trigger arm transverse to said sleeve, said sleeve rotatable from a first orientation to a second orientation in response to an animal moving said trigger arm, said first orientation preventing the movement of said blocking means from said first position to said second position and said second orientation allowing such movement.

4,270,301

MODEL AIRPLANE AND BLANK THEREFORE

Donald J. Meek, 3503 Hanks St., Sacramento, Calif. 95826

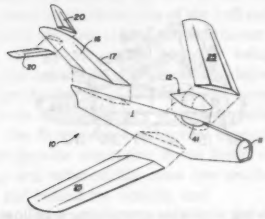
Filed Jan. 22, 1979, Ser. No. 5,577

Int. Cl.[3] A63H *27/02*

U.S. Cl. 46—1 L **1 Claim**

1. The blanks for constructing a model airplane to be formed entirely from preprinted flat sheet material that serves as patterns and also as skin structure of the parts of the airplane comprising in combination:
a fuselage blank having score lines outlining a widened central portion, an inwardly tapering leading portion, and an inwardly tapering trailing portion in which the severity of the taper is greater for the trailing end of the fuselage blank, tab members joined to said fuselage blank along said score lines at opposed lateral extremities of said fuselage blank, whereby when said fuselage blank is rolled, and opposed ones said tab portions placed in registry and mutually affixed, said fuselage is thereby formed,

pairs of wing blanks adapted to form forward and rearward wings, each said wing blank comprising: two panels separated by a score line adapted to define the leading edge of the completed wing, a first of said panels being adapted to form a top wing surface and having a greater area than the second panel so as to provide an arcuate camber on the wing then folded along said score line, a marginal portion at the extremity of said second panel remote from the leading edge score line, a second score line associated with said marginal portion which, in the completed wing,



locates a trailing edge of said wing about which said marginal portion may be folded whereby said marginal portion can fasten to the first panel, a face portion at an end of said wing blank extending between termini of said first and second score lines for forming a root face to be used in adhering said wing to the airplane, said first and second panels having different lengths as measured from the wing blank portion that is adapted to form the wing tip to said root face portion so as to provide dihedral to the wing.

4,270,302

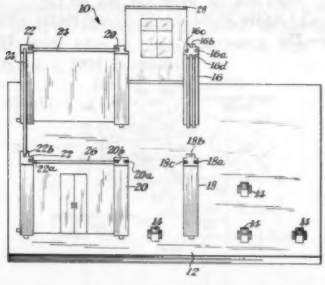
CONSTRUCTION TOY

Ghulam M. Dandia, 1324 NE. 127 St., Miami, Fla. 33161

Continuation of Ser. No. 763,047, Jan. 27, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 966,319

Int. Cl.³ A63H *33/08*

U.S. Cl. 46—19 **4 Claims**



1. A toy construction set useful for the erection of toy buildings of various designs, the toy comprising:

a first rigid, planar board having an array of apertures disposed on one planar surface of said board;

a plurality of pillars, each of said pillars having a lateral cross-sectional configuration sized to be fitably received into any of said apertures of said array, each of said pillars having at least two longitudinally disposed side grooves therein;

a plurality of wall panels connectable within said pillar longitudinal grooves along said panel sides for forming a wall structure of a building;

an upper floor panel utilized for forming an additional floor in conjunction with said pillars, said upper floor panel having an aperture disposed therein for receiving a stairwell, said upper floor panel having a plurality of tabs disposed around its perimeter, said tabs being receivable within the longitudinal grooves within said pillars for mounting said upper floor panel in a spaced relationship above said planar surface;

a plurality of steps, each of said steps being pie-shaped and including a protruding peg vertically disposed on one side and an aperture on an opposite side aligned with said vertically protruding peg, whereby said steps are mounted together forming a spiral staircase disposable beneath said aperture disposed in said upper floor panel, said spiral staircase being mounted on said planar surface.

4,270,303

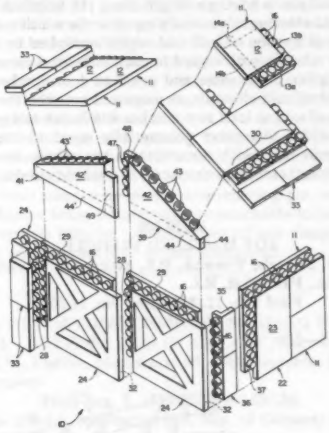
CONSTRUCTION TILES FOR MAKING TOY WALL PANELS

Piritheos G. Xanthopoulos, San Jose, and Lloyd W. Stewart, Lafayette, both of Calif., assignors to Artzan Corporation, Lafayette, Calif.

Filed Apr. 30, 1979, Ser. No. 34,244

Int. Cl.³ A63H *33/08*

U.S. Cl. 46—25 **13 Claims**



1. A tile unit for use in constructing toy structure, said unit being formed to comprise a surface configuration adapted to provide a building panel, pairs of adjacent edge margins on both the top and bottom of the panel, said pairs being mutually displaced with respect to each other diagonally of said panel to define offset pairs of edge margins, protruding means carried along each of the first offset pair of edge margins on one side of said tile, and an elongate opening formed along each of the other offset pair of edge margins on the other side of said tile for receiving and engaging said protruding means of another of said tiles for interlocking a plurality of tiles together in a common plane to form a wall-like structure.

4,270,304

FLUSH-FITTING TOY BUILDING BLOCKS

Nancy C. Sofer, P.O. Box 6764, Jerusalem, Israel

Filed Nov. 17, 1978, Ser. No. 961,667

Claims priority, application Israel, Dec. 2, 1977, 53519

Int. Cl.³ A63H *33/06, 33/08*

U.S. Cl. 46—28 **11 Claims**

1. A toy building set especially adapted to facilitate the construction of integral plan horizontal and stepped surfaces in vertical building structures comprising:

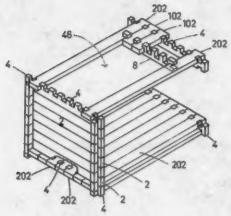
a plurality of rectangularly-shaped prismatic elements hav-

ing a height, a length and a width dimension and each having a rectangular cross-section along at least a portion of their length;

the height of each said elements being twice their width;

at least two notches cut into said elements in the direction of the height of the element and spaced from each other along the axis in the direction of the axial length of each said prismatic elements;

said two notches being positioned adjacent the respective ends of each said element; and,



each said notch having a length along the length dimension of said element substantially equal to the width and height with dimension of half said width multiplied by a multiplier wherein with regard to each individual element said multiplier is the same and equal to 1 or 3 wherein the length of said elements, as measured between the centerlines of said at least two notches is a factor multiplied by the width dimension substantially equal to the factor wherein the width dimension is the whole number or fraction thereof and the factor is a whole number.

4,270,305

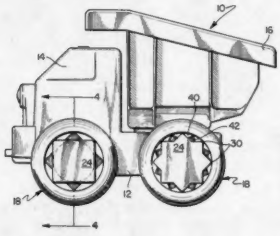
TOY WHEELED VEHICLE

Donald H. Samuels, Warwick, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Feb. 12, 1979, Ser. No. 11,551

Int. Cl.³ A63H *17/26*

U.S. Cl. 46—221 **3 Claims**



1. A wheel assembly for a toy vehicle and the like, comprising an axle having an outer portion of a predetermined non-circular geometric shape, and a matching wheel easily mountable thereon and separable therefrom, said wheel having an outer surface and a front annular recess defining an inner axle supporting surface and terminating in a rearwardly offset wall, said wall including an opening corresponding both in size and shape to the predetermined shape of said axle outer portion such that said axle outer portion may pass through said wall for disposition in said annular recess when said wheel is mounted to said axle and wherein said axle outer portion contacts said inner wheel surface so as to support said wheel thereon, said wheel assembly comprising a plurality of such assemblies mounted on said toy vehicle, at least two of such wheel assemblies being characterized by a different geometric shape wherein a child must match the wheel having a particular shape wall opening within the similarly shaped axle portion in order to mount said wheel assemblies upon said toy.

4,270,306

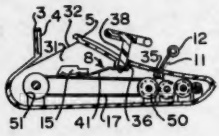
TOY DRIVING SIMULATOR WITH BRAKE

Ronald R. Klawitter, Hermann, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed Jan. 3, 1980, Ser. No. 109,231

Int. Cl.³ A63H *17/00;* **G09B** *9/02;* **A63B** *67/00;* **A63F** *9/00*

U.S. Cl. 46—248 **2 Claims**



1. A toy driving simulator comprising a hollow body in the form of a vehicle having a windshield with a reflective inner surface, a steering mechanism rotatably mounted on and having a part extending within said body, a miniature vehicle mounted within said body and connected to be moved laterally of said body by means of said steering mechanism; a belt, one reach of which extends beneath said miniature vehicle, said belt having on its outer surface representation of a path aong which the said miniature vehicle is to be directed; means for driving said belt, and brake means having a lever extending through and pivotally mounted in said body, said brake means being selectively engagable with a part of said belt driving means by manipulation of said lever, both said miniature vehicle and said upper surface of said belt being observable in said reflecting surface by one manipulating the steering mechanism.

4,270,307

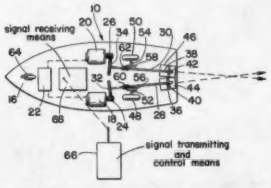
REMOTE CONTROLLED STEERABLE AMPHIBIOUS TOY

Fujio Arigaya, Tanashi, Japan, assignor to Takara Co., Ltd., Katsushika, Japan

Filed Oct. 16, 1979, Ser. No. 85,237

Int. Cl.³ A63H *30/04, 23/02, 23/04;* **B63H** *5/08*

U.S. Cl. 46—254 **12 Claims**



1. A steerable self-propelling toy vehicle capable of moving on a solid support surface and on water, the vehicle comprising:

a hull having sufficient buoyancy to keep the vehicle afloat on water, and having a general longitudinal axis;

a first variable speed motor and a second variable speed motor incorporated in the hull;

a first and second axle connected respectively to the first and second motor and extending at inclined angles to the longitudinal axis;

a power source operatively connected to the first and second motors;

a first and second wheel mounted to the hull for driving the vehicles on the solid support surface when the vehicle is operated as a land going vehicle, the first wheel being

positioned offset to one side of the vehicle relative to the general longitudinal axis of the hull and being operatively connected to the first axle of the first motor to be driven thereby, the second wheel being positioned offset to the other side of the vehicle relative to the general longitudinal axis of the hull and being operatively connected to the second axle of the second motor to be driven thereby;

a first screw propeller and a second screw propeller mounted to the hull for contact with water when the vehicle is operated on water, the first screw propeller being positioned offset to one side of the vehicle relative to the general longitudinal axis of the hull and operatively connected to the first axle of the first motor to be driven thereby, the second screw propeller being positioned offset to the other side of the vehicle relative to the general longitudinal axis of the hull, and operatively connected to the second axle of the second motor to be driven thereby, the first and second screw propellers are positioned to provide respective thrust force vectors which converge and substantially cross one another outside of the hull and behind the vehicle, and

control means operatively connected to the power source and the first and second motors for continuously and differentially varying, at the option of an operator, the levels of power supplied from the power source respectively to the first and second motors to vary the relative rotation of respectively the first and second wheels and the first and second screw propellers whereby the operator steers the vehicle both on the solid surface and on water by manipulating the control means to drive a predetermined wheel or screw propeller at a greater relative rotational speed to effectuate steering.

4,270,308

GREENHOUSE

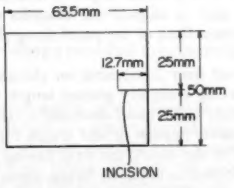
Yukio Mitsuishi, Machida; Shigeru Shiozaki, and Kinji Hasegawa, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 820,033, Jul. 28, 1977, abandoned, which is a continuation of Ser. No. 616,899, Sep. 25, 1975, abandoned. This application Mar. 5, 1979, Ser. No. 17,538

Claims priority, application Japan, Sep. 27, 1974, 49/110428; Dec. 23, 1974, 49/146713; Jan. 28, 1975, 50/10953; Feb. 12, 1975, 50/16919; Mar. 5, 1975, 50/26053; Apr. 16, 1975, 50/45125; Jul. 1, 1975, 50/80484

Int. Cl.[3] **B29C** *25/00*

U.S. Cl. 47—17 **1 Claim**



1. In a greenhouse for protecting plants from weather exposure, including a framework and a single layer of polyethylene terephthalate film stretched over the framework, the improvement wherein said polyethylene terephthalate film is a biaxially oriented film having:

a refractive index in the oriented direction of 1.59–1.75,

a refractive index in the thickness direction of 1.485–1.56,

a density of 1.350–1.382 g/cm^3,

an intrinsic viscosity of 0.52–0.71, and

a thickness of 50–500 microns.

4,270,309

PLANT RECEIVING VESSEL FOR INSERTION IN A HYDROPONIC VESSEL

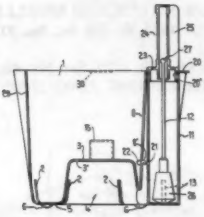
Gerhard Baumann, Berne, Switzerland, assignor to Interhydro AG, Berne, Switzerland

Filed Mar. 24, 1976, Ser. No. 669,747

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1975, 2512296; Switzerland, Oct. 16, 1975, 13417/75

Int. Cl.[3] **A01G** *31/02, 9/02*

U.S. Cl. 47—59 **5 Claims**



1. An assembly for use in the hydroculture of plants, comprising a plant receiving vessel of thin-walled material, an outwardly extending flange at the upper rim of said vessel, apertures in the wall of the vessel for exchange of nutritive solution, at least one ancillary instrument instruments being a water level indicator having a tube and a float coupled with an indicating member within said tube, at least one opening in said flange of the vessel, said opening being adapted for sliding insertion of said water level indicator through it, a retaining pin on said tube of the water level indicator and a hole in the wall of said vessel adapted to receive said retaining pin, said water level indicator being thus removably attachable to said vessel by inserting its tube into said opening of said flange and its retaining pin into said hole of said vessel wall.

4,270,310

SUPPORT DEVICE FOR AN UPSTANDING PLANT SUPPORT ROD IN A PLANT POT

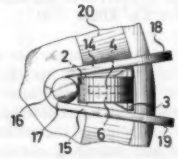
Gerhard M. Fischer, Maxstrasse 55, 8580 Bayreuth, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,136

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2835939

Int. Cl.[3] **A01G** *9/12*

U.S. Cl. 47—70 **10 Claims**



1. A support device for a potted plant support rod in a plant pot comprising,

a rod support body portion extending inwardly from the top rim portion of a plant pot,

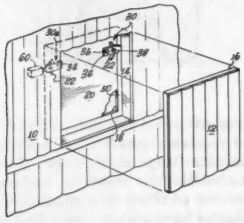
the plant pot having a vertical axis of symmetry, said rod support body portion having a channel therethrough bounded at the inner end by a support groove substantially parallel with the axis of symmetry of the plant pot and at the outer end by the inner side of the plant pot, an upstanding plant support rod adapted to be positioned in said support groove, separate wedge means for insertion in said channel from the top thereof between said support

rod and the inner side of the plant pot to anchor said support rod in said support groove, said separate wedge means comprising a pair of spaced leg portions one of which is adapted to engage the inner side of the plant pot and the other of which is adapted to engage said support rod, and a resilient bight portion connecting said pair of leg portions at the tops thereof and biasing said pair of leg portions away from one another.

4,270,311
ESCAPE HATCH FOR DWELLINGS

Chester J. Palomar, 1401 W. 9th St., Sp. 81, Pomona, Calif. 91766

Filed May 18, 1979, Ser. No. 40,300
Int. Cl.[3] E05C *15/02, 21/02*
U.S. Cl. 49—141 **8 Claims**



1. An improved escape hatch assembly for a dwelling having an opening in an external wall, comprising:

a hatch panel adapted to closely fit within said opening and being like said wall in thickness; and

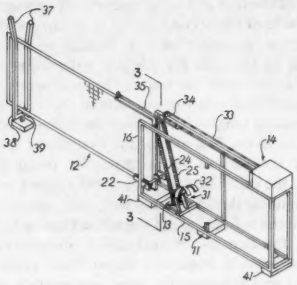
a plurality of latch assemblies, each comprising a pair of blades respectively disposed on opposite faces of said hatch panel, said blades being pivotable about a pivot pin extending through the panel and joined together by a guide pin extending through an arcuate slot centered on the pivot pin, whereby the blades are pivotable together between a first position wherein they entirely overlie the panel and a second position wherein portions thereof overlie the wall.

4,270,312
GATE ASSEMBLY

Thomas M. Courtis, and Carl E. Donelson, both of Red Lodge, Mont., assignors to Red Lodge Manufacturing Company, Red Lodge, Mont.

Filed Oct. 9, 1979, Ser. No. 82,543
Int. Cl.[3] E05D *7/00*
U.S. Cl. 49—385 **16 Claims**

1. A gate assembly including support means, gate means carried by said support means and movable with respect thereto, and gate control means associated with said gate means; said support means including a plurality of frame members, said gate means having one end thereof disposed adjacent to said support means and extending outwardly therefrom, pivot means connecting a lower part of said gate means to an adjacent lower portion of said support means, said pivot means including a rotatable shaft and shaft carrier means, said gate control means including at least one coil spring member, one end of said spring member being attached to an upper part of said gate means adjacent to said support means and the opposite end of said spring member being affixed to said support means at a point spaced from said pivot means, fulcrum means disposed adjacent the end of said spring member affixed to said support means, said fulcrum means being disposed on the side of said spring member remote from said pivot means, said fulcrum means including an arcuate spring-engaging section disposed in substantially the same vertical plane as said spring member, whereby said gate means is movable about said pivot means in a vertical plane with the movement thereof being controllable by said spring member throughout its path as said

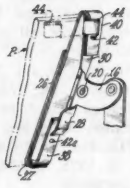


spring member moves into contact with said spring-engaging section of said fulcrum means.

4,270,313
LOUVER LOCK

Salvatore A. Dalia, 2125 W. 234th St., Torrance, Calif. 90501

Filed Aug. 29, 1979, Ser. No. 70,912
Int. Cl.[3] E06B *7/08*
U.S. Cl. 49—403 **6 Claims**



1. The combination of a bracket liner and an interengaging retainer for use with a generally rectangular, flatfaced louver panel when such panel is disposed in a jalousie opening by means of a pair of aligned end brackets each positioned to engage opposite faces of the panel along respective end margins thereof

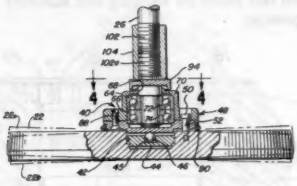
said bracket liner comprising an elongated, generally flat strip having a slightly greater length than the height of said panel, with a panel-abutment ledge disposed along an intermediate portion of said length for engagement with an end of the panel, the strip having opposite end segments formed as mutually facing, open, U-shape channels, each with a U-channel arm overlying said flat strip and thus adapted for reception of an edge of the panel there under and subsequent insertion of the panel and end-mounted liners into said end brackets, the upper end of each of said U-channels thus having its inward and downwardly directed U-channel arm disposable in planar juxtaposition with an adjacent surface of said end bracket along an inner side of said jalousie opening and in such position said bracket surface and U-channel arm being jointly disposed to transversely receive lock means comprising a separate retainer clasp for effecting tight engagement of the U-channel arm and the juxtaposed bracket surface.

4,270,314

BEARING MOUNT FOR LAPPING MACHINE PRESSURE PLATE

Joseph V. Cesna, Niles, Ill., assignor to Speedfam Corporation, Des Plaines, Ill.

Filed Sep. 17, 1979, Ser. No. 76,306
Int. Cl.³ B24B 7/04
U.S. Cl. 51—131.4 **6 Claims**



1. For use in a lapping machine having a lap wheel rotated about a fixed axis and at least one pressure plate supported on a shaft disposed generally parallel to the lap wheel axis but laterally offset therefrom, an improved bearing mount between the pressure plate and shaft that accommodates both axial compression and lifting loads between the shaft and pressure plate while yet allows free rotation and swiveling of the pressure plate relative to the shaft, the combination comprising a bearing housing block and means nonrotatably keying the bearing housing block coaxially of the pressure plate while yet allowing the pressure plate to move axially and wobble slightly relative to the bearing housing block, bearing means rotatably supporting the bearing housing block coaxially of the shaft, said bearing means having inner races disposed on the shaft and having outer races disposed in the bearing housing block and means engaging the inner and outer races of the bearings units for holding them on the shaft and in the bearing housing block respectively, and a self-aligning axial thrust ball bearing coaxially disposed between and engaged by the bearing housing block and the pressure plate under the axial compression loads of the shaft.

4,270,315

FIXTURE FOR HOLDING A TWIST DRILL TO BE REGROUND

Reinhold Reiling, Gründeltorstrasse 9, and Karl Reiling, Pforzheimer Strasse 28, both of D-7531 Kämpfelbach-Ersingen, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 56,093
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833420; Apr. 18, 1979, 2915601
Int. Cl.³ B24B 3/26
U.S. Cl. 51—219 R **15 Claims**

1. A fixture for holding a twist drill to be reground, comprising:

a baseplate,

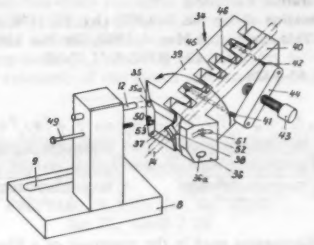
a carriage slidably mounted on said baseplate and longitudinally guided thereon in a predetermined direction,

an angle bracket slidably and pivotally mounted on and adapted to be fixed to said carriage and guided thereon transversely to said predetermined direction,

a crosspin mounted on said angle bracket and adapted to extend transversely to said predetermined direction, and

a drill holder adapted to hold a twist drill, and detachably fitted on said crosspin to be pivotally movable thereon and extending laterally of said angle bracket at an angle to said predetermined direction,

said drill holder being longitudinally split to form two jaws for gripping a twist drill, and including tightening means for forcing said jaws against said twist drill, said tightening means comprising a tightening bar which extends on the outside of one of said jaws and carries transverse guide pins slidably extending through said one jaw and secured to the other of said jaws, and said jaws being comblike and provided with interfitting teeth which have mutually oppositely-directed conical recesses for engaging said twist drill.

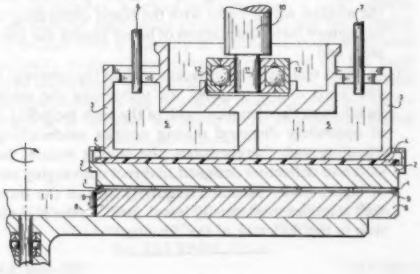


4,270,316

PROCESS FOR EVENING OUT THE AMOUNT OF MATERIAL REMOVED FROM DISCS IN POLISHING

Hans Krämer, and Helmuth Kirschner, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,458
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809274
Int. Cl.³ B24B 7/22
U.S. Cl. 51—283 R **4 Claims**



1. In a process for evening out the amount of material removed from discs in a polishing operation performed with a polishing machine equipped with a polishing plate covered with a polishing cloth, at least one carrier plate having a side which faces the polishing plate on which the discs to be polished are cemented and at least one pressure piston which presses the carrier plate against the polishing plate covered by the polishing cloth, the improvement comprising:

placing inserts comprising soft elastic bodies having pressure-equalization cells between said pressure piston and the back of the carrier plate.

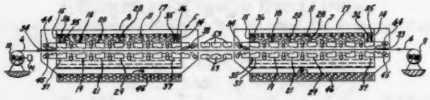
4,270,317
APPARATUS USED IN THE TREATMENT OF A CONTINUOUS STRIP OF METAL AND METHOD OF USE THEREOF

Eugene J. Kurie, Bridgewater, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 949,872, Oct. 10, 1978, abandoned. This application Mar. 4, 1980, Ser. No. 126,937

Int. Cl.[3] **B24C** *3/12, 7/00*

U.S. Cl. 51—426 **27 Claims**



1. An apparatus used in the treatment of a traveling web, comprising:

(a) a tank having a horizontally elongated chamber enclosed therein, the chamber being free of any rollers for contacting the web traveling therethrough and having a pair of opposing end walls having therein, openings which are horizontally aligned and elongated and through which the traveling web enters and exits the chamber in a horizontal pathway;

(b) means for supporting the web on turbulent streams of liquid as the web travels through the chamber, including two parallel rows of treatment nozzles extending longitudinally of and within the chamber and positioned to sandwich the traveling web therebetween, each row of nozzles including a number of transversely oriented elongated nozzles relative to the direction of travel of the web through the chamber, at least a majority of the nozzles each having:

(I) a longitudinally extending compartment with an inlet therein;

(II) a single continuous slot disposed in the surface of the nozzle confronting the traveling web, the slot being in communication with the compartment and extending transversely across the web;

(III) a deflector adjacent the slot for directing a continuous stream of liquid, under pressure, from the slot angularly against the traveling web at an angle substantially less than 90° to the plane of the web;

(bb) means for circulating liquid, under pressure, through the nozzles which coact with the liquid circulating means to impinge turbulent streams of liquid against the traveling web; and

(c) a liquid seal disposed adjacent each of the openings in the end walls of the chamber for preventing the escape of liquid from the chamber, each of the seals including a pair of oppositely disposed sealing nozzles sandwiching the traveling web therebetween, the sealing nozzles having slots and deflectors designed to direct converging streams of liquid, under pressure, angularly against the traveling web at angles substantially less than 90° to the plane of the web in the direction of the chamber.

4,270,318
FIRE RESISTANT FITTING FLOOR HOLES

James C. Carroll, Hamilton, Ohio; Donald L. Chapman, Liberty, Ind., and Gilbert A. McGoldrick, Hamilton, Ohio, assignors to Square D Company, Palatine, Ill.

Filed Nov. 15, 1978, Ser. No. 961,089

Int. Cl.[3] **E04N** *9/00*

U.S. Cl. 52—1 **11 Claims**

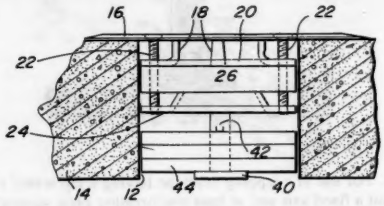
1. A fitting assembly for insertion in a floor passage extending through a floor, the improvement comprising;

a top plate;

a bottom plate; said top and bottom plates each having a periphery shaped and dimensioned to be received in said floor passage,

an expandable rubber ring between said top and bottom plates;

securing means extending through said top plate and engaged in said bottom plate for positioning said top plate with respect to said bottom plate and for moving said bottom plate towards said top plate to expand said ring between said plates for securing said assembly within said floor passage;



said top and bottom plates, said rubber ring and said securing means comprising a sub-assembly,

an expandable fire resistant material carried by said sub-assembly on the side of said bottom plate opposite from the side on which said top plate is located, said material being adapted to swell upon exposure to heat to seal said floor passage, and

carrying means for carrying said material on the side of said bottom plate opposite from the side on which said top plate is located.

4,270,319
MOBILE VENDING BOOTH

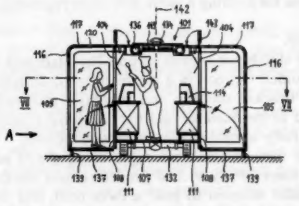
Ratko Spasojevic, Sandbergerstrasse 36, D-7000 Stuttgart 1, Fed. Rep. of Germany

Filed Oct. 22, 1978, Ser. No. 87,045

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846272

Int. Cl.[3] **E04B** *7/16, 3/43;* **B60P** *3/025*

U.S. Cl. 52—36 **23 Claims**



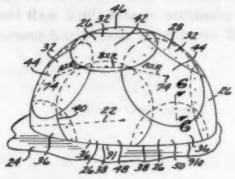
1. A mobile vending booth with a vending opening at at least one long-side and with a chassis floor, characterised by at least one roller shutter for shutting at least the vending opening and by at least one roller shutter guideframe, which is slidingly supported within the vending booth and is able to be pulled out for making the vending booth broader, as necessary for vending, along one full long-side of the vending booth.

4,270,320

FRAMELESS SUBSTANTIALLY SPHERICAL BUILDING STRUCTURE

Craig Chamberlain, P.O. Box 5854, Huntington Beach, Calif. 92646

Filed Jul. 25, 1979, Ser. No. 60,604
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—81 **22 Claims**



1. A building having substantially the shape of a sphere cut-off by a truncation plane, the sphere having a geometrical radius defining a radius of the building, the building comprising:

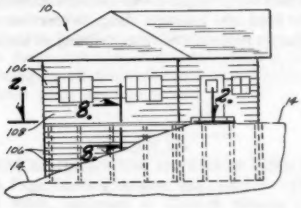
a plurality of panel members attached to one another in partially overlapping configurations, each panel member having a substantially spherical exterior surface having a curvature defined by the radius of the building the panel members including panel members of a first kind which are substantially circular segments of a sphere and the panel members further including panel members of a second kind which are partial circular segments of the sphere, the partial circular segments having a circumferential first edge which comprises a truncation line of the domed shaped building, the first edge substantially in contact with a support surface upon which the building rests.

4,270,321

METHOD AND MEANS OF INSULATING A BUILDING FOUNDATION WALL

Thomas E. Fisher, 21 Crestwood Dr., Council Bluffs, Iowa 51501

Filed Feb. 19, 1980, Ser. No. 122,572
Int. Cl.³ E04B *1/80*; E02D *19/18*
U.S. Cl. 52—97 **13 Claims**



6. In combination with a building having a foundation wall disposed at least partially below grade, said foundation wall having interior and exterior surfaces, a system for securing a plurality of panels of insulation material to the exterior surface of the building, comprising,

a plurality of panels of insulation material arranged relative to said foundation wall to substantially cover the exterior surface thereof,

a plurality of flanged retaining members secured to the exterior surface of said foundation wall, each retaining member including an elongated base portion interposed between adjacent edges of adjacent panels, and a pair of flanges laterally extended from said base portion so as to at least partially overlie the exterior surfaces of said adjacent panels for retaining said panels in position against the foundation wall,

means for securing said base portion to said exterior wall surface whereby said pair of flanges are operative to retain said panels against said exterior wall surface, and

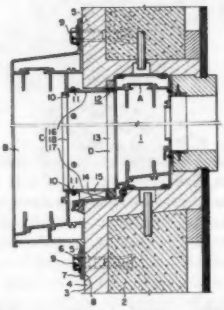
an elongated rain shield secured to said exterior wall surface at a position in engagement with the top edge of said panels and including a downwardly and outwardly inclined top surface for directing water, foreign matter and the like exteriorly of said panels and retaining members.

4,270,322

DOUBLE-GLAZED WINDOW STRUCTURE

Kinji Ishida, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,265
Int. Cl.³ E04B *3/26*
U.S. Cl. 52—98 **3 Claims**



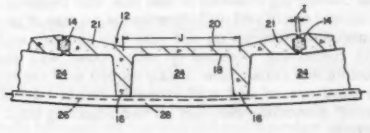
1. A double-glazed window structure which comprises a ready-built window frame fixed to a window opening of a building, an add-on window frame fixed to the exterior surface of the wall of the building around the window opening, an intermediate frame connected to the inboard periphery of the add-on window frame to enter the window opening closely reaching the outboard periphery of the ready-built window frame, and a joint formed by filling the gap between the intermediate frame and the ready-built window frame with a sealing material, wherein the intermediate frame is formed with an upper cross-member, a lower cross-member, a right upright and a left upright, each of the cross-members and the uprights being provided with a plurality of ditches running in parallel longitudinally with regular intervals engraved on the back surface of the inboard peripheral portion thereof, along which the intermediate frame can be readily broken to remove excessive length so as to adjust the depth of the intermediate frame.

4,270,323

CONCRETE TANK

Francis X. Crowley, 24 Lanark Rd., Wellesley, Mass. 02181

Filed May 3, 1979, Ser. No. 35,615
Int. Cl.³ E04H *12/16*
U.S. Cl. 52—224 **14 Claims**



1. A prestressed concrete tank, comprising:

a wall of precast concrete panels,

a plurality of discrete, cast-in-place, precompressed, horizontal, collar-shaped beams surrounding said wall of panels,

said beams being vertically spaced from each other along said wall,

the total circumferential area of said beams being less than the circumferential area of said wall of panels, and

means for precompressing said beams and panels during construction of said tank.

4,270,324

ASSEMBLY OF WALL ELEMENTS

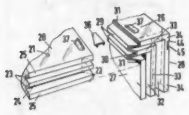
Rudolf Schaefer, Brauerstrasse 35, 4100 Duisburg, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,428

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749874; Jul. 19, 1978, 2831652

Int. Cl.[3] **E04B** *5/00*

U.S. Cl. 52—285 **17 Claims**



1. In a wall assembly formed of a plurality of wall elements each having opposite side faces and edge faces interconnecting said side faces; first connecting elements formed along peripheral zones of at least some of the wall elements; second connecting elements formed along peripheral zones of at least some of the wall elements; adjoining wall elements being joined together by a groove-and-tongue connection each formed of one of the first connecting elements and one of the second connecting elements; one of the first and second connecting elements forming each groove-and-tongue connection comprising a tongue formed on one wall element and the other of the first and second connecting elements forming each groove-and-tongue connection comprising a grooved part formed on another, adjoining wall element; the tongue and the grooved part of each groove-and-tongue connection being in an interfitting relationship with one another; the improvement wherein

(a) a first one of said wall elements carries one of said first connecting elements extending on a side face thereof and one of said second connecting elements extending on an edge face thereof; said first connecting element of said first wall element being at an angle other than zero with respect to and merging into said second connecting element of said first wall element in a corner zone of said first wall element; further wherein the tongue constituting one of said connecting elements of said first wall element has a slanted end portion of 45°; said end portion forming a transition into the grooved part constituting the other of said connecting elements of said first wall element;

(b) a second one of said wall elements carries two of said first connecting elements on one side face thereof; said two first connecting elements of said second wall element meeting in a corner zone of said second wall element;

(c) a third one of said wall elements carries two of said second connecting elements on two adjoining edge faces thereof;

(d) said first, second and third wall elements are in an adjoining relationship with one another;

(e) said first connecting element of said first wall element and one of said two second connecting elements of said third wall element together form a first one of said groove-and-tongue connections;

(f) said second connecting element of said first wall element and one of said two first connecting elements of said second wall element together form a second one of said groove-and-tongue connections; and

(g) the other of said two first connecting elements of said second wall element and the other of said two second connecting elements of said third wall element together form a third one of said groove-and-tongue connections.

4,270,325

DEVICE FOR INSTALLING TILES

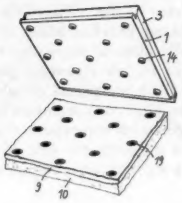
Luigi Mandelli, Via Ponti, Monteveglio, Province of Bologna, Italy

Filed Mar. 19, 1979, Ser. No. 21,537

Claims priority, application Italy, Mar. 21, 1978, 3367 A/78

Int. Cl.[3] **E04F** *13/08*

U.S. Cl. 52—391 **3 Claims**



1. A device for installing tiles on a surface to be lined, comprising a support having a front side on which a tile is attached with the interposition of adhesives and a rear side provided with coupling means, anchoring means mounted on the surface to be lined and co-operating with said coupling means for detachably holding said support with the tile attached thereon, wherein according to the improvement said coupling means comprises tubular projections in spaced apart relation and said anchoring means comprises cup-like elements embedded in the surface to be lined and having a flange wherefrom a pair of concentrical rings project, said rings defining an annular interspace.

4,270,326

FIREPROOF DOOR FOR HOTELS, SKYSCRAPERS AND THE LIKE

Heinz Hölter, Gladbeck; Heinz Gresch, Dortmund-Derne, and Heinrich Igelbuscher, Gladbeck, all of Fed. Rep. of Germany, assignors to Industrie-Wert Beteiligungsgesellschaft mbH, Fed. Rep. of Germany

Filed Aug. 7, 1979, Ser. No. 64,599

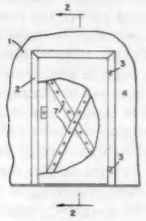
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2836489; Sep. 11, 1979, 2839499

Int. Cl.[3] **E04B** *1/74*

U.S. Cl. 52—404 **12 Claims**

1. Fireproof door, especially for hotels, skyscrapers, or similar buildings consisting of a metal frame with metal fittings and an insulation layer made of fireproof material arranged

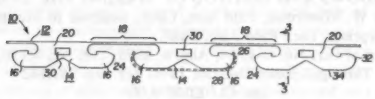
inside the metal frame as well as a facing attached to the metal frame, wherein the insulation layer is made of an elastic, flexible, fireproof fabric made of ceramic fibers and the layer is fixed to the metal frame.



4,270,327
PANEL CARRIER AND PANEL CONSTRUCTION INCORPORATING SUCH CARRIER

Paul Van Leeuwen, Kirkland, Canada, assignor to Hunter Douglas International N.V., Curaco, Netherlands Antilles

Filed Nov. 16, 1978, Ser. No. 961,266
Claims priority, application Canada, Oct. 31, 1978, 315365
Int. Cl.³ E04B *5/52*; E04C *2/42*
U.S. Cl. 52—488 **16 Claims**



1. A carrier for panels, the carrier capable of being secured to a support, comprising:

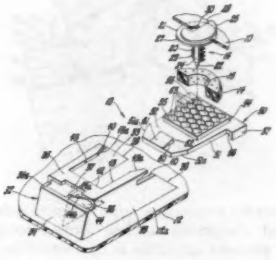
an elongated, generally planar strip-like base being bendable transverse to its length so as to generally follow the contour of the support; the generally planar strip-like base having connected thereto substantially a plurality of panel engaging elements connected to and extending outwardly from the base in spaced apart relation therealong; each said panel engaging element including a pair of panel engaging prongs, the panel engaging elements being disposed substantially in a common plane, each panel engaging element being so constructed that the distance between the prongs of each said pair remains the same and the engaging elements of the carrier remain generally co-planar when said base is bent.

4,270,328
FASTENER MEANS FOR INTERIOR TRIM PANEL

Norman B. Page, Sterling Heights, and Leslie W. Bursott, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1979, Ser. No. 105,276
Int. Cl.³ E04C *1/40*
U.S. Cl. 52—511 **3 Claims**

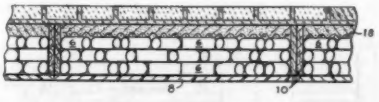
1. A fastener means to effect the attachment together of a first panel, having the shank of a push-in stud extending outward from one side thereof, and a second panel, said fastener means including a retainer base adapted to be fixed on said second panel, said retainer base having a fastener receiving opening therein for reception of the push-in stud, said opening being substantially larger than the maximum outside diameter of the shank of the stud; and, a multi-holed retainer having opposed inboard and outboard surfaces thereon and mounting means adjacent to its outer edges adapted to effect attachment of said multi-holed retainer to said retainer base so that said outboard surface faces away from the second panel with said multi-holed retainer positioned so as to overlie said enlarged opening in said retainer base while still permitting limited movement of said multi-holed retainer on said retainer base in a plane parallel to and spaced from the second panel, said multi-holed retainer having a plurality of spaced apart stud receiving holes therethrough of a size for the normal reception of the stud, said holes being grouped in the central portion of said multi-holed retainer and arranged in a pattern to overlie substantially the entire area of said enlarged fastener receiving opening, said stud receiving holes being spaced closely adjacent to each other so as to define a honeycomb cellular structure having a thin core wall separating adjacent said stud receiving holes, each said core wall adjacent to said outboard surface being tapered so as to define a substantially sharp edge at said outboard surface whereby to effect guiding of the shank of the push-in stud into an associated said hole during assembly of the second panel to the first panel and so as to permit the shank of the stud to effect movement of said multi-holed retainer as the push-in stud is inserted into the associated said stud receiving hole to effect substantially alignment of the stud therewith.



4,270,329
INSULATED WALL AND WALL PART

Alvin E. Moore, 8712 Manini Way, Diamondhead, Bay St. Louis, Miss. 39520

Filed Apr. 26, 1979, Ser. No. 33,723
Int. Cl.³ E04C *1/06*
U.S. Cl. 52—576 **4 Claims**



1. A transportable wall panel, including:

a can-supporting element;

at least two bars, positioned at opposite edge portions of said can-supporting element, at angles with respect to said element;

a first tier of cans on said can-supporting element, between said bars;

a second tier of cans, superposed on said first tier;

at least one other tier of can superposed on said second tier;

the top tier of cans being spaced downward and inward from the top edges of said bars;

insulating material on said top tier, between said bars, in the space between the top cans and said top edges of said bars; and

a substantially planar, panel-reinforcing element over said insulating material, and connected to upper edge portions of said bars.

4,270,330

RIDGE BATTEN BRACKET

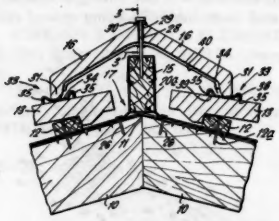
Roger Townsend, Reigate, England, assignor to Redland Roof Tiles Limited, Reigate, England

Filed Aug. 21, 1979, Ser. No. 69,101

Claims priority, application United Kingdom, Aug. 25, 1978, 34626/78

Int. Cl.[3] E04B 1/38

U.S. Cl. 52—712 4 Claims



1. A bracket for attaching a ridge batten to rafters of a roof structure and comprising a plate formed to provide two aligned first portions extending in opposite directions from a center line of the bracket, and including means for fixing said first portions to rafters, and two second portions offset from one another and extending in opposite directions from the center line one on each side of and substantially parallel to the first portions, the second portions including integrally formed pointed tangs and in which the second portions are bent in situ to engage at spaced locations at least three sides of the ridge batten and are secured thereto by the tangs.

2. A bracket as claimed in claim 1 in which the second portions each engage all four sides of the ridge batten.

4,270,331

METHOD OF SECURING AN EXPANSION DOWEL INCLUDING A METALLIC EXPANSION SLEEVE

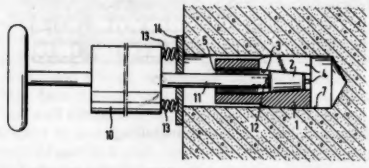
Gusztav Lang, Munich, and Peter Mauthe, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Mar. 8, 1979, Ser. No. 18,852

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810503

Int. Cl.[3] E04B 1/49; E21D 20/00

U.S. Cl. 52—744 18 Claims



1. Method of securing an expansion dowel in a borehole in a receiving material where the expansion dowel comprises an axially elongated metal expansion sleeve having a leading end which is inserted first into the borehole and a trailing end, the sleeve has an axially extending bore therethrough axially extending slots are formed in the sleeve extending radially outwardly from the bore to the outside surface of the sleeve with the slots extending from the leading end of the sleeve to a plane extending transversely of the axis of the sleeve intermediate the leading and trailing ends, the bore is cylindrically shaped and threaded from the trailing end for a portion of the axial length of the bore and the bore extending from the leading end is frusto-conically shaped toward the cylindrically shaped portion and the diameter of the frusto-conically shaped portion increases from the leading end to the diameter of the cylindrically shaped portion, a frusto-conically shaped expanding cone is positioned in the frusto-conically shaped portion of the bore and the cone has a maximum diameter smaller than the diameter of the cylindrically shaped part of the bore and is shaped complementary to the frusto-conically shaped portion of the bore, the method comprising the steps of inserting the sleeve into the borehole and inserting the cone into the frusto-conically shaped portion of the bore and displacing the cone axially through the bore toward the leading end and expanding the portion of the sleeve containing the slots radially outwardly into holding engagement with the surface of the borehole with the portion of the sleeve located axially rearwardly of the frusto-conically shaped portion remaining in spaced relationship from the surface of the borehole, injecting a flowable substance into the bore in the sleeve so that the substance flows outwardly through the slots into the open spaces between the outside surface of the sleeve and the juxtaposed surface of the borehole, wherein the improvement comprises using a corrosion prevention material as at least a part of the flowable substance and depositing an enclosing layer of the material for protecting the expansion sleeve against corrosion, and using a pressure generating injection member having an outlet opening between the trailing end of the cone and the trailing end of the sleeve for injecting the flowable substance, and introducing the outlet opening into the bore within the expansion sleeve rearwardly of the cone.

4,270,332

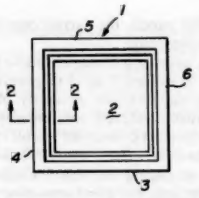
WINDOWS AND METHOD OF MAKING THE SAME

George W. Montrouil, Palo Alto, Calif., assignor to Montrouil Enterprises, Inc., Palo Alto, Calif.

Division of Ser. No. 603,046, Aug. 8, 1975, Pat. No. 4,115,964. This application Dec. 30, 1976, Ser. No. 755,642

Int. Cl.[3] E04C 1/34

U.S. Cl. 52—772 12 Claims



1. A window frame assembly comprising:

a U-shaped sub-framing member;

a T-shaped main framing member;

an L-shaped facing member;

a rod member;

a rod bearing member having a hole for receiving and supporting said rod member such that said rod member is free to rotate therein;

a U-shaped glazing stop;

a non-removable snap-on cover;

means including screw means in said glazing stop for attaching said L-shaped facing member to said main framing member of forming a first U-shaped channel, said first U-shaped channel being adapted for placement over said U-shaped sub-framing member;

means including screw means in said glazing stop for attaching said U-shaped glazing stop to said main framing member for forming a second U-shaped channel; said second U-shaped channel being adapted for retaining a glazing product;

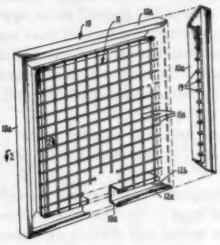
means for placing rod bearing block member at a selected location in said second U-shaped channel; and

means for non-removably inserting said snap-on cover between the legs of said U-shaped glazing stop.

4,270,333
SECURITY SCREEN

Richard M. Singer, Lafayette, Calif., and Charles H. Seidl, Kane, Pa., assignors to Kane Manufacturing Corporation, Kane, Pa.

Division of Ser. No. 19,344, Mar. 12, 1979, Pat. No. 4,221,038.
This application Apr. 3, 1980, Ser. No. 136,942
Int. Cl.[3] B23P 15/12; E04C 2/38
U.S. Cl. 52—818 3 Claims



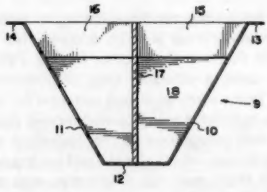
1. A screen product comprising:

a rectangular frame formed with parallel upper and parallel lower side members, each side member having a substantially rectangular cross section defined by a front wall, parallel inner and outer side walls and a pair of flanges, each flange extending inwardly from one side wall toward the other flange and being substantially parallel to said front wall, said pair of flanges defining an opening therebetween, the inner side wall and one flange connected thereto being formed with a plurality of slots spaced equal distances apart along the side member; and an interlacing of wire rods, said rods being interlaced on a center-to-center distance equal to the spacing between slots formed in the inner side walls and connected flanges of said side members.

4,270,334
REINFORCING STRUCTURE

Fredrick L. Bender, Saginaw, Mich., assignor to Bender's Sales & Service, Inc., Saginaw, Mich.

Filed Aug. 6, 1979, Ser. No. 64,013
Int. Cl.[3] E04C 2/34
U.S. Cl. 52—828 7 Claims

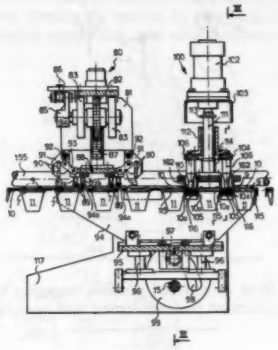


1. A reinforcing structure for attachment to one side of a member to be reinforced, said structure comprising an elongate, trough-like, uniform width body independent of said member, said body having a base and side walls diverging outwardly from opposite edges of said base and terminating in co-planar free ends; an elongate strut fixed to said base between said edges of said base and extending outwardly from said base between said side walls, said strut having a free edge flush with the free ends of said side walls; a plurality of ribs fixed to said side walls and to said strut and spaced along the length of said body; and means carried by said body for attaching the latter to said member.

4,270,335
METHOD OF AUTOMATIC PACKAGING OF MATERIALS IN CONTAINERS AND MACHINE FOR CARRYING OUT THE SAID METHOD

Edgar Dardaine, Sorel-Moussel, France, assignor to E. P. Remy et Cie, Dreux, France

Filed Jun. 21, 1979, Ser. No. 50,793
Claims priority, application France, Jun. 23, 1978, 78 18871
Int. Cl.[3] B65B 61/26
U.S. Cl. 53—411 15 Claims



1. A method of automatically packaging materials into containers, the method including conveying a plurality of flat horizontally disposed retainer blanks in sequence along a predetermined path, each retainer blank having a plurality of container-supporting apertures therein; inserting containers into the apertures of each retainer blank; filling the containers with a product material; individually closing each container; and bending down two opposed marginal portions of each retainer blank to form substantially vertical sides, wherein the improvement comprises:

marking at least one of said two marginal portions before said bending step.

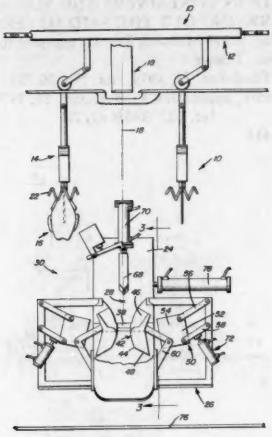
4,270,336
DISTRIBUTED PLURAL STATION BAGGING SYSTEM FOR POULTRY

William F. Altenpohl, and Paul J. Altenpohl, both of High Point, N.C., assignors to W. F. Altenpohl, Inc., High Point, N.C.

Continuation-in-part of Ser. No. 956,994, Oct. 31, 1978, Pat. No. 4,221,106, which is a continuation-in-part of Ser. No. 845,231, Oct. 25, 1977. This application Feb. 8, 1979, Ser. No. 10,595
Int. Cl.[3] B65B 5/00
U.S. Cl. 53—493 6 Claims

1. In combination with a conveyor establishing a common path of travel through a plurality of stations at which continuously moving products suspended from the conveyor are released in response to detection by a sensor at each of the stations and means at each of the stations for bagging the released products during an operational cycle of predetermined duration activated by the sensor, each of said bagging means having an element movable during the operational cycle activated by the sensor, a system for distributing the products for release amongst said stations to effect said bagging at a maximum rate, including an activity sensing lock-out device located at each of said stations engageable with the movable element for preventing operation of the sensor associated with a station at which the operational cycle of the bagging means is activated, whereby a product is conveyed along the path of travel of the

conveyor to a following station at which the bagging means is inactive, said movable element being a product packing ram



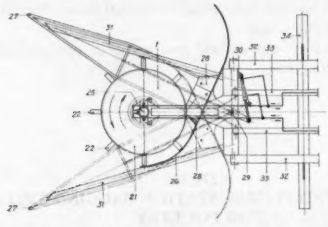
displaceable from a retracted position engaging the lock-out device to an extended position during said operational cycle.

4,270,337

HARVESTER OF SUGAR CANE OR SIMILAR PRODUCTS

Luiz A. C. D. R. Pinto, Ribeirao Preto, Brazil, assignor to Santal Equipamentos S.A. Comercio E. Industria, Brazil

Filed Aug. 8, 1979, Ser. No. 64,793
Claims priority, application Brazil, Aug. 17, 1978, 7805293[U]
Int. Cl.[3] A01D *45/10*
U.S. Cl. 56—13.9 **13 Claims**



1. A harvester for sugar cane or the like comprising:

a frame;

suspension and steering means, including steering wheels, associated with the frame supporting the same for movement in a longitudinal direction;

rotary topping means mounted on said frame for cutting the cane tops;

feeding means mounted on said frame for feeding the cane in the longitudinal direction, said feeding means including inclined rotary cylinders having helicoidal protrusions formed thereon;

base cutter means mounted on said frame for cutting the cane bases, said base cutter means including a pair of rotary members, each being provided with knives along its periphery;

intermediate transport means mounted in said frame for transporting the cane including at least two cooperating rollers mounted for rotation about respective transversely extending axes;

chopping and elevating means mounted on said frame for chopping and then elevating the cane, said chopping and elevating means including a single shaft mounted for rotation about a substantially horizontal axis located in a vertical plane of substantial symmetry of the harvester and which extends in the longitudinal direction, at least one knife and an equal number of radially extending vanes mounted on said single shaft for rotation in respective planes transverse to said shaft axis of rotation, a substantially cylindrical member enclosing at least a portion of said single shaft having a cane inlet formed in a front wall thereof located below the axis of rotation of said single shaft and a cane outlet formed on an upper wall thereof, a directional duct member located over said cane outlet and mounted for rotation about a substantially vertical axis, said directional duct defining a substantially closed passageway which is inclined upwardly and towards a lateral side of the harvester;

cleaning means mounted on said frame proximate to said directional duct for extracting trash from the cane being cut; and

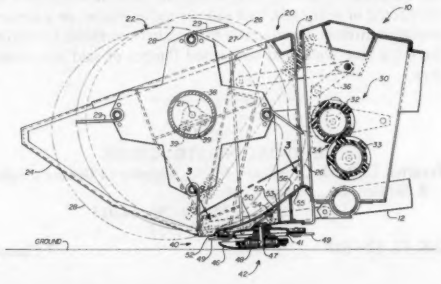
means for driving said harvester and the components thereof including an engine, at least one hydraulic pump, drive transmission means and driving mechanisms.

4,270,338

CROP HARVESTING MACHINE

Lawrence M. Halls, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Dec. 10, 1979, Ser. No. 102,180
Int. Cl.[3] A01D *14/00*
U.S. Cl. 56—14.4 **18 Claims**



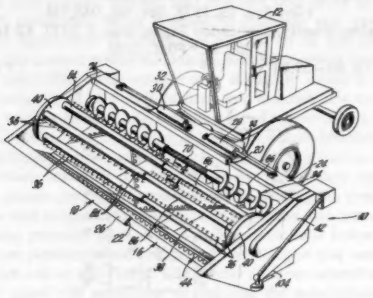
1. In a crop harvesting machine having a mobile frame adapted for movement over a field; a transverse cutterbar supported by said frame, said cutterbar having a plurality of rotatable cutter units; a rotatable crop conditioning means mounted on said frame rearwad of said cutterbar for conditioning severed crop material; a reel mounted on said frame above and forward of said cutterbar, said reel including an axis of rotation forward of said cutterbar, said reel having a plurality of tines rotatable about said axis of rotation, said reel being positionable such that said tines can engage crop material to pull it rearwardly toward said cutterbar and convey severed crop material towards said crop conditioning means; and drive means for rotating said reel, said conditioning means and each said cutter unit, the improvement wherein each said cutter unit comprises a bottom driven rotary disc cutter, said cutterbar including a generally concave shield, relative to said reel, forming a substantially continuous guide surface extending over each said disc cutter toward said crop conditioning means to cooperate with said reel in conveying severed crop material thereto, each said disc cutter including at least one cutter blade which, upon rotation of said disc cutter, extends forwardly beyond said arcuate shield.

4,270,339

VARIABLE WIDTH TOOL ATTACHMENT FOR USE WITH A VEHICLE

Hunter Wolfe, 121 Yardley Ave., Fallsington, Pa. 19054

Filed Feb. 9, 1978, Ser. No. 876,313
Int. Cl.[3] D01H *13/00*; E01H *5/00*
U.S. Cl. 56—95 **2 Claims**



1. A variable width tool attachment for use with a vehicle comprising an overall tool formed by two tool portions, said two tool portions being slidably mounted for mutual relative movement in the direction generally normal to the direction of intended vehicle travel, means operatively associated with said overall tool to move said two tool portions relative to each other in the direction generally normal to the direction of intended vehicle travel, said two tool portions being slidably movable from a first position forming an overall tool of minimum width to a second position forming an overall tool of maximum width, said two tool portions being aligned generally coincidently and formed with means for storing at least a part of one said tool portion within the other said tool portion when said overall tool is in said first position of minimum width, said two tool portions being formed and aligned to present, in both said first position and said second position, an overall tool having a substantially continuous and uninterrupted lower lip for scooping matter immediately contiguous the earth surface over which the vehicle is driven, finger gathering means comprising a driven rotatable drum having telescoping bars freely rotating therein and revolving thereon, said bars comprising concentric cylindrical members being C-shaped in cross section and formed with fingers extending radially outwardly from the opened portion of each C-shaped cross section, the fingers of one portion of each telescoping bar being positioned to fit within said space portion of the remaining part of the telescoping bar upon the compression of one bar within the other.

4,270,340

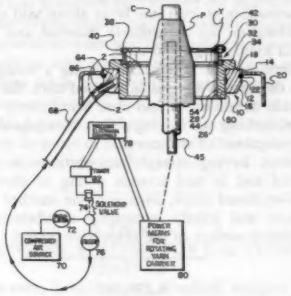
ROTATING RING YARN SPINNING OR TWISTING APPARATUS AND METHOD

Joe B. Baucom, and James E. Donnelly, both of Gastonia, N.C., assignors to Spin-O-Magic, Inc., Gastonia, N.C.

Filed Jan. 19, 1979, Ser. No. 4,710
Int. Cl.[3] D01H *7/56, 1/24*
U.S. Cl. 57—75 **12 Claims**

1. An air-bearing supported spinning or twisting ring apparatus comprising a ring holder formed with an axially extending circular wall portion and a generally radially extending wall portion, a ring member freely rotatably mounted within said ring holder and having a circular wall portion and a radial wall portion disposed in closely spaced relation to said circular wall and said radial wall, respectively, of said ring holder to form communicating narrow axial and radial annular spacings therebetween to receive air for rotatably supporting said ring member in said ring holder, thereby forming said air-bearing supported apparatus, at least one of said circular wall portions having an annular plenum cavity disposed in generally open, unencumbered, and substantially continuous communication with said narrow axial spacing, means for admitting pressurized air to said cavity, and a yarn traveler mounted on said ring member for sliding movement therearound.

7. An air-bearing supported spinning or twisting ring apparatus comprising a rotatable yarn carrier for receiving yarn thereon, power means for rotating said yarn carrier, means for selectively de-energizing said power means, a freely rotatable ring member disposed around said yarn carrier and having a yarn traveler slidably carried on said ring member for engagement and sliding rotation thereabout by said yarn, air-bearing means for rotatably supporting said ring member, means for



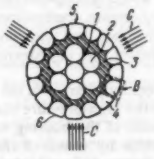
supplying air to said air-bearing means for said supporting including selectively operable means for reducing the flow of air to said air-bearing means for said supporting, and control means interconnecting said de-energizing means and said air flow reducing means for operation of said air flow reducing means after said de-energizing of said power means, said control means including selectively adjustable timer means for delaying the operation of said air flow reducing means for a predetermined time after said de-energizing means has been operated to cause said rotating ring member and said rotating yarn carrier to decelerate in predetermined relation to one another whereby suitable tension is maintained in said yarn by said traveler throughout said deceleration.

4,270,341

METHOD OF MAKING A SHAPE-STRANDED ROPE

Mikhail F. Glushko, prospekt Shevchenko, 15/5, kv. 17; Viktor K. Skalatsky, ulitsa Zhukovskogo, 5, kv. 25; Anatoly D. Zakhryamin, ultisa Yaroslavskogo, 45, kv. 14, and Gennady F. Shamrai, prospect Shevchenko, 15/5, kv. 17, all of Odessa, U.S.S.R.

Filed Dec. 15, 1978, Ser. No. 969,890
Int. Cl.[3] D07B *5/10, 1/16*
U.S. Cl. 57—215 **9 Claims**



1. A method of making a shape-stranded rope, including:
providing a core with a sheathing of a deformable material;
twisting round wires into strands by winding these round wires in at least one layer about said core with the sheathing of the deformable material;

subjecting the strand thus formed to plastic drawing until each said round wire acquires a wedge-like profile, said plastic drawing forcing the wires adjoining the sheathing of said core to become partly embedded in this sheathing, and the strand attains a substantially smooth peripheral surface; following said plastic drawing, compacting the strand thus obtained into a shaped profile, said compacting of the strand into the shaped profile is effected until some of the wires embedded in said sheathing engage said core; and

twisting the strands thus obtained into the rope.

6. A shape-stranded rope comprising

strands of a shaped profile;

a core of each said strand with a sheathing of a deformable material thereabout, said core including wire members enclosed within said sheathing;

wires wound in at least one layer about said core with said sheathing of the deformable material and forming said strand jointly with said core;

said wires of each said strand having a wedge-like profile with the narrowing end facing said core, the wires adjoining said sheathing of said core being partly embedded in said sheathing and having points of engagement with said wire members of said core;

said wires having straightline portions in cross-section thereof and in said strands owing to their wedge-like cross-sectional shape, engaging one another along helical surfaces and jointly presenting a substantially smooth peripheral surface of the respective strand.

4,270,342

METHOD OF OPERATING A GAS TURBINE PLANT

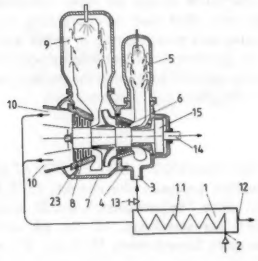
Paul Zaugg, Baden, Switzerland, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Feb. 5, 1979, Ser. No. 9,531

Claims priority, application Switzerland, Jun. 16, 1978, 6573/78

Int. Cl.³ F02C *6/00*

U.S. Cl. 60—39.04 **2 Claims**



1. In a method of operating a gas turbine plant having a turbine incorporating a high-pressure section having a high-pressure housing and a low-pressure section having a low-pressure housing, each of which has operatively connected therewith a respective high-pressure combustion chamber and low-pressure combustion chamber, and wherein the combustion air is preheated in a pre-heater, the improvement comprising the steps of:

initially heating the combustion air in the pre-heater prior to entry thereof into the high-pressure combustion chamber;

flushing the inner walls of the housing of the high-pressure section of the turbine by means of the air which is pre-heated in the pre-heater before such air enters the high-pressure combustion chamber, in order to thereby heat-up such inner walls of the housing to a predetermined temperature;

expelling exhaust gases from the high-pressure section of the turbine into the low-pressure section; and

flushing by means of said expelled exhaust gases the low-pressure housing of the turbine prior to entry of such exhaust gases into the low-pressure combustion chamber.

4,270,343

METHOD AND APPARATUS FOR RECOVERY OF ENERGY FROM BLAST FURNACE EXHAUST GAS

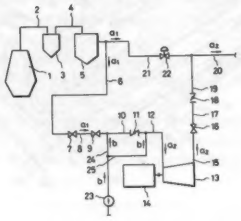
Takeshi Shirato, Tokyo, Japan, assignor to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1978, Ser. No. 943,796

Claims priority, application Japan, Dec. 5, 1977, 52-145188

Int. Cl.³ F02C *7/00*

U.S. Cl. 60—39.05 **7 Claims**



1. A method for recovering energy from high pressure exhaust gases containing dust by utilizing an axial-glow turbine, said method comprising saturating a high pressure exhaust gas containing dust with water vapor, adding additional water maintained at a temperature lower than the temperature of the saturated gas to said saturated gas by continuous spraying in an amount corresponding to 0.5 to 5% by weight of the flow rate of the saturated gas upstream of an axial-flow turbine to cool the saturated gas and form a sufficient amount of mists in the gas by condensation of water vapor, and feeding the gas to the axial-flow turbine.

4,270,344

HYBRID DUAL SHAFT GAS TURBINE WITH ACCUMULATOR

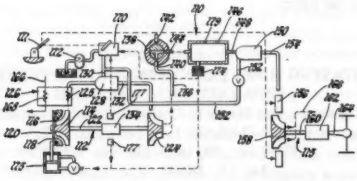
Mason K. Yu, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 907,894, May 19, 1978, Pat. No. 4,173,121. This application Jul. 18, 1979, Ser. No. 58,685

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

Int. Cl.³ F02C *3/10*

U.S. Cl. 60—39.16 R **1 Claim**



1. An automotive gas turbine engine comprising: a gasifier spool having a compressor on one end thereof and a gasifier turbine on the opposite end thereof, means including a variable area inlet for controlling air flow to said compressor during operation of said gasifier spool, a power turbine, a primary burner receiving air from said compressor and operative to produce motive fluid for driving said gasifier turbine, means including a thermally insulated accumulator and a secondary burner to receive exhaust flow from said gasifier turbine, means including a variable area nozzle to control flow from

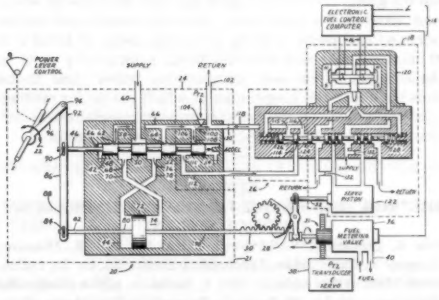
said accumulator and said secondary burner to said power turbine, control means operative on engine starting to open said variable area inlet and to direct fuel to said primary burner until the gasifier turbine increases its speed to produce a first predetermined charge pressure in said accumulator, said control means including a pressure sensor operative following attainment of said predetermined accumulator pressure to close said inlet and cut back fuel flow to a predetermined idle level in said primary burner, said idle fuel flow level to said primary combustor being selected to maintain said gasifier spool at eighty-five to ninety-five percent of its full design speed, said control means including a manual operator concurrently controlling said variable area nozzle to direct a controlled amount of motive fluid from said accumulator to said power turbine to meet the vehicle power requirements, said control means further being operative to control fuel flow to said secondary burner to maintain a desired power turbine inlet temperature schedule to meet the driver demanded vehicle output power, and said pressure sensor detecting the pressure level in said accumulator during road operation and operative when the pressure level in said accumulator falls below the maximum predetermined charge pressure to open said variable area inlet and to add fuel to said primary burner whereby the gasifier spool will accelerate to recharge the accumulator to maintain the maximum predetermined pressure level therein whereby optimized gasifier section fuel consumption is attained and increased power turbine pressure ratios are maintained, a regenerator having a compressed air pass receiving all engine air for preheat prior to its entry into said primary burner, and a hot side gas pass in said regenerator receiving all exhaust gas from said power turbine for preheating air flow through said compressed air pass whereby exhaust heat energy recovery is placed in the cycle prior to control of fuel flow entry into either said primary burner or said secondary burner to optimize engine thermal efficiency.

4,270,345

INTEGRATED CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Howard B. Kast, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 15, 1978, Ser. No. 942,738
Int. Cl.[3] F02C *9/04*
U.S. Cl. 60—39.28 R **5 Claims**



1. An improved integrated control system for a gas turbine engine which includes:

fuel control means for metering the flow of fuel to said engine;

position signal generating means comprising a backup control means for providing a position signal to said fuel control means, said fuel control means operating to meter the flow of fuel to said engine in accordance with said position signal;

biasing means comprising a primary control means for providing a bias signal for biasing said position signal during a normal mode of operation when said biasing means is in an operative condition;

wherein the improvement comprises:

said backup control means comprises a servounit which is connected to a source of fluid under pressure and is in fluid communication with a power piston, said power piston moving in response to fluid received from said servounit to provide said position signal, said servounit also including a plurality of independent fluid return conduits;

said primary control means includes a fail-fixed servovalve connected in series with one or more of said independent fluid return conduits;

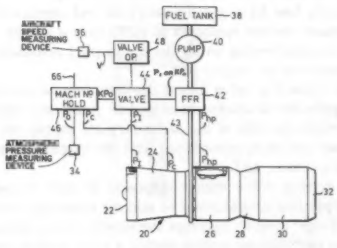
interfacing means for automatically limiting the rate of change of said position signal to limit the rate at which the flow of fuel to said engine may be changed during a failed mode of operation when said biasing means is in an inoperative condition with said servovalve acting as said interfacing means when said primary control means is in said inoperative condition to block one or more of said independent fluid return conduits in order to limit the rate of fluid return flow out of said servounit, thereby limiting the rate of movement of said power piston.

4,270,346

FUEL CONTROL SYSTEMS FOR GAS TURBINE ENGINES

Lindsay G. Dawson, Loughborough, England, assignor to Rolls-Royce Limited, London, England

Continuation of Ser. No. 808,346, Jun. 20, 1977, abandoned.
This application Jun. 27, 1979, Ser. No. 52,661
Claims priority, application United Kingdom, Jun. 24, 1976, 26317/76
Int. Cl.[3] F02K *3/00*; F02C *9/04*
U.S. Cl. 60—243 **8 Claims**



1. A fuel control system for a gas turbine engine having predetermined engine parameters and used with an aircraft, said fuel control system comprising: a fuel flow regulator for varying flow of fuel to the engine in accordance with certain of the predetermined engine parameters, said fuel flow regulator having a normal mode of operation in which said regulator varies flow of fuel in accordance with a first set of the engine parameters supplied thereto to produce a thrust level from the engine which is constant or increases with increasing aircraft speed, said first set including a parameter whose value varies with aircraft speed, and said regulator having a cruise mode of operation in which said regulator varies flow of fuel in accordance with a second set of engine parameters supplied thereto to produce a thrust level from the engine which decreases with increasing aircraft speed, said second set including a parameter whose value does not vary with aircraft speed and which replaces said parameter whose value varies with aircraft speed; and control means for selectively supplying one of said first and second set of engine parameters to said fuel flow regulator to provide for said normal or said cruise mode of operation.

4,270,347
EXHAUST GAS PURIFICATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

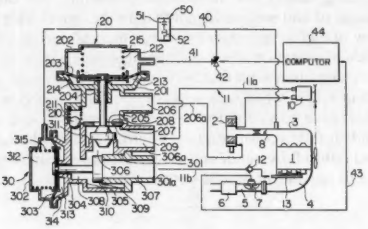
Akio Fukuba, Kariya; Michio Morishita; Kenji Tanaka, both of Toyota; Toshinobu Nishi, Nagoya, and Hideaki Ouchi, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 23, 1979, Ser. No. 60,631

Claims priority, application Japan, Jul. 21, 1978, 53-100875[U]

Int. Cl.³ F01N *3/10*

U.S. Cl. 60—276 **9 Claims**



1. An exhaust gas purification system for an internal combustion engine comprising:

a secondary air supply system for supplying a secondary air into the exhaust system of the engine,

an air-fuel ratio sensor disposed in the engine exhaust system to detect the oxygen content of the engine exhaust gases and emit an electric output signal representative of the oxygen content of the exhaust gases thus detected, and

a three-way catalyst means disposed in the exhaust system for facilitating purification of the exhaust gases,

said secondary air supply system including a secondary air supply line having a downstream end connected to said exhaust system upstream of said catalyst means,

an air pump having an air discharge port connected to said secondary air supply line,

an air metering valve means disposed in said secondary air supply line downstream of said air pump and operative to control the rate of the secondary air supply into the exhaust system in accordance with the outputs of the air-fuel ratio sensor, and

a switching valve means disposed in said secondary air supply line downstream of said air metering valve means and operative to interrupt the supply of the secondary air into said exhaust system during a high load engine operation,

wherein said air metering valve means includes a first valve member and a first valve actuator operatively associated therewith,

said switching valve means includes a second valve member and a second valve actuator operatively associated therewith, and

said air metering valve means and said switching valve means have a common valve housing structure disposed in said secondary air supply line, and

wherein said valve housing structure defines therein a first air passage forming a part of said secondary air supply line and comprising an air inlet port, a first air outlet port and a chamber therebetween,

said valve housing structure also defining therein a second air passage having an upstream end connected to said chamber and terminating in a second air outlet port,

said second air passage including a check valve disposed therein to permit only the flow of air from said chamber to said second air outlet,

said valve housing structure further defining therein a third air passage interconnecting said air inlet port and said second air passage downstream of said check valve,

said first valve member being disposed in said valve housing structure between said chamber and said third air passage to control the communication between said air inlet port and said chamber and the communication between said air inlet port and said third air passage,

said second valve member being disposed in said chamber to interrupt the communication between said chamber and said first air outlet port and communicate said chamber with said second air passage during a high load engine operation.

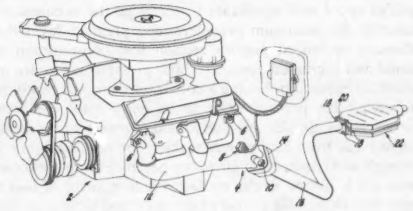
4,270,348
MATERIALS AND METHOD FOR PREVENTING HIGH TEMPERATURE SEIZE BETWEEN METAL PARTS

Robert F. Winberg, Burton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 23, 1979, Ser. No. 59,644

Int. Cl.³ F01M *7/10*; C10M *1/10, 3/02, 5/02*

U.S. Cl. 60—323 **4 Claims**



3. In an internal combustion powered automotive vehicle comprising an engine block, a manifold mechanically fastened thereto for collecting exhaust gases, and exhaust conduit components downstream of the manifold, it being desired to prevent seize between relatively stationary components after extended operation at elevated temperatures of up to about 1000° C., a method comprising interposing a layer of discrete particles between the mating surfaces of adjacent components, which particles are initially carried in a polymeric binder medium and are comprised of one or more members taken from the group consisting of glass having a fusion point above about 1000° C., copper oxide, aluminum oxide, and silicon oxide, and said particles being in the size range of about 2 to 100 microns, and said particles being substantially inert to exhaust gases at elevated temperatures below their fusion points but above the temperature at which the binder medium is destroyed such that the particles provide antiseize characteristics to said components after said extended operation.

4,270,349
DISTRIBUTING DEVICE OF VEHICLE HYDRAULIC CONTROL SYSTEM

Boris A. Ljubimov, Verkhnyaya ulitsa, 18, kv. 30, Moscow; Evgeny N. Chervyakov, Mozhaiskoe shosse, 38, kv. 36, Odintsovo Moskovskoi oblasti; Jury I. Sudakov, ulitsa akademika Komarova, 10, kv. 45; Iraida S. Pogorelova, Uralskaya ulitsa, 5, kv. 138, both of Moscow; Petr Y. Pritsker, prospekt Lenina, 39, kv. 11, Minsk; Igor I. Kandrusev, ulitsa D. Serdina, 24, kv. 45, Minsk, and Zilek B. Liberfarb, ulitsa Karla Marxa, 25, kv. 41, Minsk, all of U.S.S.R.

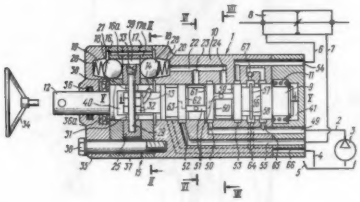
Filed Mar. 14, 1978, Ser. No. 886,773

Int. Cl.³ F16D *31/02*

U.S. Cl. 60—384 **3 Claims**

1. A hydraulic steering system of a transport vehicle, comprising a hydraulic distributor connected by hydraulic lines to a servomotor, a pump and a tank, and having a hydraulic distributor control member connected by a screw and ball

transmission with a steering drive shaft, a hydraulic machine having working chambers, said hydraulic machine connected by hydraulic lines with the hydraulic distributor and employing a rotary member which serves to alter the volume of the working chambers of said hydraulic machine and said rotary machine being further mechanically connected by means with the control member of the hydraulic distributor and with the steering drive shaft for joint rotation and axial displacement of said control member, the steering drive shaft being capable of rotating relative to the rotary member of the hydraulic machine within a gap defining a degree of play ensuring a required displacement of the control member of the hydraulic distributor prior to actuation of said rotary member, and a pressure line connecting said pump with said servomotor, the improvement comprising said hydraulic machine including



two cylinder blocks with pistons, whose cylinders are arranged circumferentially in opposing pairs and having working chambers of the oppositely arranged cylinders on one side of the pistons in communication with each other via passage means and coupled in fluid communication with the hydraulic distributor, the rotary member of the hydraulic machine being disposed between the cylinder blocks and comprising a disk having profiled cams arranged in opposing pairs on the opposite end faces of the disk and engaging their respective pistons on the other side of said pistons, said disk being connected with the control member of the hydraulic distributor by means of a pin extending through the steering drive shaft, and the cylinder blocks and the end faces of the control member of the distributing device are formed with interconnected spaces therebetween.

4,270,350

APPARATUS AND METHOD FOR CONVERTING SOLAR ENERGY

Donald M. Chevalier, 248 - 15th Ave. South, Great Falls, Mont. 59405

Filed Oct. 25, 1978, Ser. No. 954,364
Int. Cl.[3] F01K *27/00, 25/10*
U.S. Cl. 60—516 **18 Claims**

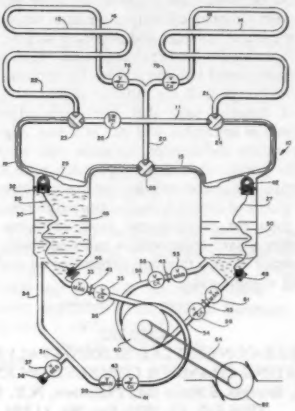
1. In an apparatus for converting solar energy to mechanical energy including first and second tubing members in which a refrigerant composition is alternately vaporized and condensed by alternate exposure of said tubing members to the sun's heating rays, the improvement comprising:

(a) first and second liquid containing reservoirs,

(b) a hydraulic motor driven by liquid passing between said first and second reservoirs,

(c) liquid conduit members extending between each of said reservoirs and said hydraulic motor for directing liquid therethrough,

(d) gas conduit members extending between each of said first and second tubing members and said first and second reservoirs for directing gas therebetween, and



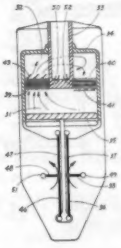
(e) valve means cooperating with said gas conduit members for limiting the flow of gas to one of said reservoirs from one of said tubing members at a time.

4,270,351

HEAT ENGINE AND THERMODYNAMIC CYCLE

John P. Kuhns, 1332 Kathryn St., Hurst, Tex. 76053

Filed Nov. 13, 1978, Ser. No. 960,233
Int. Cl.[3] F01B *15/06*
U.S. Cl. 60—517 **4 Claims**



1. A thermodynamic energy conversion apparatus comprising:

a. a variable volume, pressure tight vessel consisting essentially of a single cylinder and slidable, mating piston therewithin;

b. a plunger slidably and sealingly penetrating through a wall of said vessel to the outside;

c. at least a first heat exchanger mounted within said vessel on said plunger;

d. conduits through said plunger and sealingly connected with said first heat exchanger for heat transport between said heat exchanger and its respective external caloric reservoir serving as a first source for heat exchange;

e. check valve means to allow uni-directional flow of a working fluid past said heat exchanger responsive to relative movement between said plunger, cylinder and piston to transfer heat between said working fluid and said first heat exchanger at a first time in a cycle;

f. a second means for exchanging heat with a second source at an opposite time in said cycle from said heat exchange with said first heat exchanger and for preventing said

working fluid from exchanging heat with both said sources at the same time;

g. coordinated interconnecting means for effecting relative motion between said plunger, cylinder and piston such that said cylinder cyclicly alternates between maximum and minimum volumes and displaces said working fluid in one direction for heat exchange with one of said sources at minimum vessel volume and in the opposite direction for heat exchange with the other of said sources at maximum vessel volume; such that said thermodynamic energy conversion apparatus will run as a heat engine when the temperature differences between said sources is sufficiently greater than the compression ratio adiabatic temperature difference and said apparatus can be driven as a heat pump to create a temperature difference equal to or less than the compression ratio adiabatic temperature difference; said compression ratio adiabatic temperature difference being a function dependent on said vessel alternating volume cycle.

4,270,352

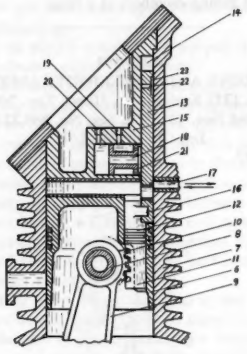
CYCLE-CONTROLLED SLIDING-VALVE IN A HEATING-CHAMBER COMBUSTION ENGINE

George K. Buergel, 6 Stone Rd., Plainview, N.Y. 11803

Filed Feb. 13, 1979, Ser. No. 11,856

Int. Cl.³ F02G *1/00*

U.S. Cl. 60—517 **15 Claims**



1. A cycle controlled sliding valve in a heating chamber combustion engine, comprising:

a housing;

a cylinder defined within said housing;

a piston disposed for movement within said cylinder;

a piston-extension disposed for movement within said cylinder;

a connecting rod having an end pivotally connected to said piston;

a pinion carried by said end of said connecting rod;

a rack positioned within said cylinder and slidable therein, said pinion engaging said rack, and said rack engaging said piston-extension;

a heating chamber;

a path within said housing in communication with said heating chamber; and

an opening within said piston-extension positioned such that said path and said opening are aligned, thereby connecting the cylinder and the heating chamber, at least at some point during a working cycle of said piston,

whereby said piston and piston-extension are capable of moving axially within said cylinder in a reciprocal manner during the working cycle of said piston, and said piston-extension is capable of moving axially within said cylinder relative to said piston as said connecting rod swings and causes said pinion to move the rack axially within said cylinder, said rack causing said piston-extension to move axially relative to said piston.

4,270,353

SERVO BOOSTERS FOR VEHICLE BRAKE SYSTEMS

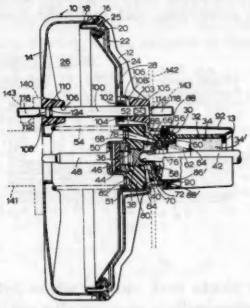
Alfred W. Thomas, Saarbrucken, and Ulrich W. Danne, Bendarf-Sayn, both of Fed. Rep. of Germany, assignors to Girling Limited, Birmingham, England

Filed Aug. 24, 1978, Ser. No. 936,512

Claims priority, application United Kingdom, Oct. 20, 1977, 43644/77

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547 R **26 Claims**



1. In a servo booster assembly for vehicle brake systems comprising a housing having opposed walls, a movable wall positioned between said housing walls and dividing the interior of said housing into two chambers, an output member having an operative connection with said movable wall and operable through one of said housing walls, a control valve assembly having an operative connection with said housing, and an input member for operating said control valve assembly for controlling a supply of differential pressure to opposite sides of said movable wall, the invention comprising stationary force transmitting means extending through said movable wall from one to the other of said housing walls, means sealing said movable wall to said force transmitting means, and means for connecting said housing to a relatively fixed vehicle bulkhead in a position adjacent said force transmitting means with said force transmitting means being located to transmit substantially directly to said bulkhead reaction forces and substantially relieve said housing walls from said forces upon operation of said booster assembly, said housing walls being of a thickness and material which in the absence of said force transmitting means are incapable of accommodating the stresses of said reaction forces without excessive axial deformation.

4,270,354

MASTER CYLINDER

Naganori Koshimizu, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Aug. 17, 1978, Ser. No. 934,592

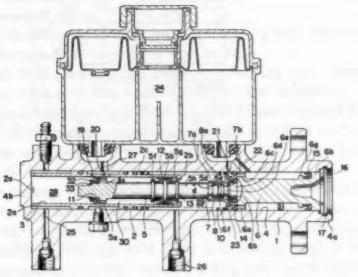
Claims priority, application Japan, Aug. 19, 1977, 52/99353

Int. Cl.³ F15B *7/00*

U.S. Cl. 60—581 **4 Claims**

1. A master cylinder construction comprising a cylinder having two piston chambers of different diameters, the smaller diameter piston chamber of said different diameter piston chambers comprising a cylindrical sleeve slidably received in said cylinder, a first piston and a second piston slidably disposed respectively in the smaller diameter piston chamber and the larger diameter piston chamber of said piston chambers, reduced diameter stems projecting from the opposing end portions of the pistons, respectively, a flange formed around

the outer periphery of each of said stems, a split sleeve consisting of at least two cooperating elements and having inwardly projecting portions on the inner circumferential surface thereof at the opposite ends respectively, said split sleeve being around said reduced diameter stems with the inwardly projecting portions engaging behind the respective flanges, a sleeve member around the outer circumference of the split sleeve portions for retaining the split sleeve portions in a cylindrical shape, said sleeve member having an annular outwardly extending flange at one end thereof, said one end of said sleeve member having transmitting means between said sleeve member and said second piston in the larger diameter piston chamber for transmitting a force to said second piston in the larger diameter piston chamber, a spring abutment projection located on the outer wall of said cylindrical sleeve which comprises the smaller diameter portion chamber of said piston chambers, said cylindrical sleeve further having an inwardly extending projection at the end adjacent said split sleeve for holding said first piston therein, a spring disposed around said sleeve member abutting against said annular outwardly extending flange and against said spring abutment projection for holding said cylindrical sleeve in said cylinder and said sleeve member on said split sleeve portions, and for causing said first and second pistons to return to a normal position after having been actuated.



4,270,355

MASTER CYLINDER AND ACTUATOR ASSEMBLIES

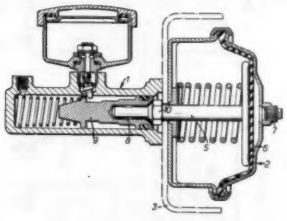
Martin Green, Birmingham, England, assignor to Girling Midland Ross Air Actuation Limited, Birmingham, England

Filed Jul. 20, 1978, Ser. No. 926,493

Claims priority, application United Kingdom, Jul. 20, 1977, 30541/77

Int. Cl.³ F15B *15/18*

U.S. Cl. 60—593 **8 Claims**



1. A master cylinder and actuator assembly for a vehicle comprising mounting means interposed between adjacent ends of said cylinder and said actuator assembly for mounting said master cylinder and actuator in operative relationship with respect to each other, a push rod extending from the actuator through the mounting means and being moveable between retracted and extended position, said push rod being engageable with a piston working in the master cylinder when moved towards its extended position, and stop means comprising a lateral projection on the push rod which is engageable with the mounting means for limiting the retracted movement of said push rod relative to the mounting means, said stop means being so located on said push rod relative to said mounting means that when the piston of the master cylinder is in its inoperative position and said push rod is in its retracted position, there is a clearance between the piston and the adjacent end of the push rod.

4,270,356

TURBOCHARGED ENGINE AND METHOD OF OPERATING SAME

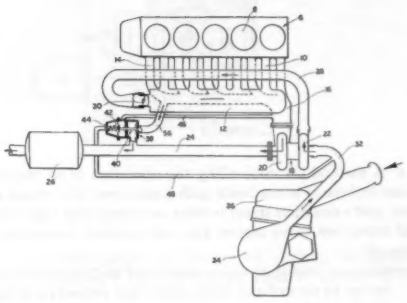
Heinz-Dieter Will; Werner Dommes, and Hans-Werner Pölzl, all of Ingolstadt, Fed. Rep. of Germany, assignors to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,816

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742251; Oct. 7, 1977, 2745153

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—602 **7 Claims**



1. An engine system comprising:

an internal-combustion engine having an air intake and an exhaust-gas output;

an exhaust-gas turbine connected to said exhaust-gas output and drivable by the pressure therein at a speed generally proportional to the exhaust-gas pressure;

a supercharger driven by said turbine and connected to said air intake of said engine to feed air to said engine at a pressure generally proportional to the turbine speed;

a valve connected across said turbine and openable to shunt engine exhaust gases around said turbine and thereby reduce said turbine speed and therewith the pressure at which said supercharger feeds air to said engine, said valve having

a valve seat having an inner edge defining a predetermined flow cross-sectional area, said seat being formed with a tapered region, and

a valve body having an end face engageable over said seat, of an area substantially greater than said flow cross-sectional area, and having an outer edge lying outside said inner edge of said seat and closely adjacent said tapered region when said valve is closed, said body being movable in a closing direction toward said seat and in an opening direction away from said seat, said outer edge forming with said tapered region an increasingly large flow cross section as said end face pulls away from said seat on displacement of said body in said opening direction, whereby the overall flow cross-section of said valve is uniformly increased as said valve opens; and

means responsive to engine speed, connected to said valve, and including a spring urging said valve body in said closing direction, said means being for opening said valve

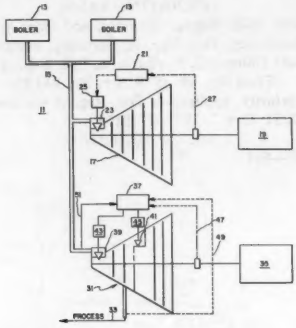
above a predetermined engine speed and for generally proportionally decreasing said exhaust-gas pressure with increasing engine speed above said predetermined engine speed.

4,270,357

TURBINE CONTROL

Anthony J. Rossi, Leominster, and Donald F. Behringer, Ashburnham, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Oct. 10, 1979, Ser. No. 83,345
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—660 **6 Claims**



1. A method for controlling the operation of an extraction steam turbine in accordance with a minimum inlet steam pressure; said extraction steam turbine including inlet valve means and extraction valve means; and, said method comprising the steps of:

positioning said inlet valve means and said extraction valve means in accordance with speed and extraction pressure error signals whenever the inlet steam pressure exceeds the minimum inlet steam pressure;

positioning said inlet valve means in accordance with an inlet pressure signal whenever the inlet steam pressure falls below the minimum inlet steam pressure; and,

positioning said extraction valve means in accordance with an inlet pressure signal and a speed signal whenever the inlet steam pressure falls below the minimum inlet steam pressure.

4,270,358

APPARATUS AND METHODS OF COOLING A HOT FLUID STREAM

Matloob Husain, Wheaton; Ban-Yen Lai, Willowbrook, and Richard L. Schmitt, Batavia, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 25, 1979, Ser. No. 42,364
Int. Cl.³ F28B *7/00, 1/02, 9/06*
U.S. Cl. 60—693 **27 Claims**

1. Apparatus comprising:

a first heat exchanger sized to cool and/or condense a hot fluid stream passed into contact therewith by rejection of heat to a first cooling fluid up to an average predetermined temperature and flow of the first cooling fluid, with said heat exchanger having inadequate cooling capacity during peak cooling conditions,

means to pass the hot fluid stream through the first heat exchanger in indirect heat exchange with the first cooling fluid,

a second heat exchanger for cooling the hot fluid stream when heat rejection therefrom to the first cooling fluid alone provides inadequate cooling of the hot fluid stream in the first heat exchanger,

the second heat exchanger being arranged to be in a series or parallel position with respect to the first heat exchanger,

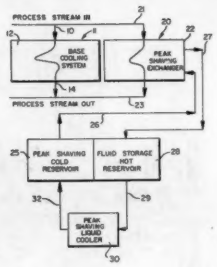
means to pass the hot fluid stream through the second heat exchanger,

a hot reservoir for a secondary cooling liquid when hot,

a cold reservoir for the secondary cooling liquid when cold,

the capacities of the hot and cold reservoirs being adequate to hold the entire volume of secondary cooling liquid for the peak cooling conditions,

a conduit from the cold reservoir to the second heat exchanger for supplying cold secondary cooling liquid in



indirect heat exchange to the hot fluid stream passed through the second heat exchanger,

a conduit for withdrawing hot secondary cooling liquid from the second heat exchanger and delivering it to the hot reservoir,

a conduit communicating with the hot reservoir and a cooler for delivering hot secondary cooling liquid from the hot reservoir to the cooler to be cooled, and

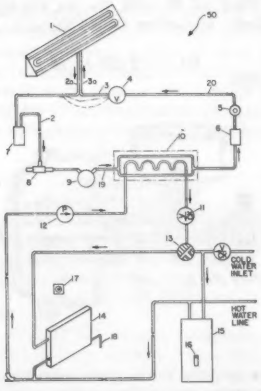
a conduit communicating with the cooler and the cold reservoir for delivering cold secondary cooling liquid from the cooler to the cold reservoir.

4,270,359

SOLAR HEATING SYSTEM

Steven L. Hummel, 2403 N. Corona, Colorado Springs, Colo. 80907

Filed Dec. 7, 1978, Ser. No. 967,417
Int. Cl.³ F25B *27/00, 27/02, 13/00*
U.S. Cl. 62—2 **10 Claims**



1. A closed circuit heating apparatus which is capable of extracting both solar and non-solar heat energy from the surrounding atmosphere and using such energy to heat air, water or other fluids, the apparatus comprising

a first heat exchanger means positioned outdoors so as to be capable of absorbing both non-solar heat from the surrounding atmosphere and solar heat directly from the sun's rays on a sunny day, said first heat exchanger including fluid flow channels through which a volatile fluid flows,

a compressor,

a first fluid flow conduit means connecting said first heat exchanger means with said compressor,

a second heat exchanger means, said second heat exchanger being capable of heating air, water, or other fluid,

a second fluid flow conduit means connecting said compressor with said second heat exchanger,

an expansion valve,

a third fluid flow conduit means connecting said second heat exchanger with said expansion valve,

a fourth fluid flow conduit means connecting said expansion valve with said first heat exchanger, and wherein

portions of said first fluid flow conduit means and said fourth fluid flow conduit means nearest said first heat exchanger means are positioned sufficiently proximate to one another to provide for heat transfer therebetween.

8. In a method of extracting heat energy from outdoors and using it to heat air, water or other fluid, the method including circulating a volatile fluid through a first heat exchanger located outdoors wherein said fluid is changed from a liquid-vapor mixture to a heated vapor, passing said vapor through a first fluid flow conduit means to a compressor wherein it is further heated, passing said heated vapor through a second fluid flow conduit means to a second heat exchanger wherein it is used to heat air, water or some other fluid and is concurrently changed to a liquid, passing said liquid through a third fluid flow conduct means to an expansion valve wherein it is changed to a liquid-vapor mixture, and then passing said liquid-vapor mixture through a fourth fluid flow conduit means to the first heat exchanger,

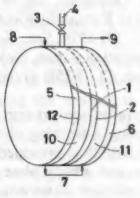
the improvement comprising positioning said first heat exchanger so that it will be capable of being contacted by the sun's rays on a sunny day, and positioning portions of said first and fourth fluid flow conduit means near said first heat exchanger in close enough proximity that heat transfer between the fluids passing through each can occur.

4,270,360

DEVICE FOR STORAGE OF HYDROGEN

Masanori Nakane, Takatsuki; Yasuaki Osumi, Minoo; Hiroshi Suzuki, Ikeda, and Aakihiko Kato, Matsubara, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,481
Claims priority, application Japan, Mar. 19, 1979, 54/32937
Int. Cl.[3] F17C *11/00*
U.S. Cl. 62—48 **6 Claims**



1. A device for the storage of hydrogen, which comprises:

a container,

two porous plates opposed parallelly to each other across a fixed distance within the container and fastened to the inner wall of the container so as to divide the interior of the container,

two heating/cooling members disposed one each outside the porous plates and separated from the corresponding porous plates by a fixed distance, and

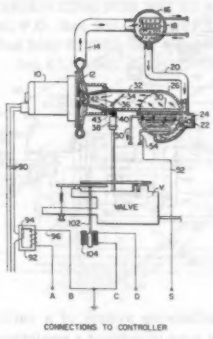
an alloy capable of storing hydrogen placed in the spaces intervening between the porous plates and the heating-/cooling members.

4,270,361

ENERGY MANAGEMENT CONTROLLER FOR CENTRIFUGAL WATER CHILLER

Michael A. La Barge, 3135 Bruce Dr., Fremont, Calif. 94538

Filed Mar. 14, 1979, Ser. No. 20,590
Int. Cl.[3] G05D *23/32*; F25B *41/04*
U.S. Cl. 62—158 **12 Claims**



1. In the combination of a system for cooling including a loop for providing a flow of cooling fluid to a body to be cooled;

a heat exchanger for cooling said fluid supplied to said loop;

a compressor powered refrigeration cycle for cooling said exchanger having a flowing fluid for passing at least to an inlet from said exchanger to a compressor, a compressor outflow having thermal connection to a heat sink to dissipate heat from said loop and an inlet to said exchanger; and,

means for throttling the inlet to said compressor to adjust the power required to operate said compressor, and a control for changing said means for throttling, the improvement in said control comprising:

means for measuring the power output of said compressor in precisely predetermined increments of the full power output of the full power rating of said compressor;

means for measuring the temperature of cooling fluid in said loop connected to said loop;

thermostat means for determining whether the temperature in said loop is above or below a selected level and emitting respective above or below signals, said thermostat means connected to said means for measuring temperature;

a first timer having a setting for a sequential timed interval for periodically communicating therethrough above and below signals from said thermostat means at the end of timed intervals;

circuit means operable through said timer at the end of each said interval to select from said means for measuring the power output a greater incremental power setting in response to said above signal and a lower power setting in response to a below signal in said means for measuring the power; and,

means operably connected between said power measuring means and said means for throttling the inlet to said compressor for restricting the flow of refrigerant fluid to said

compressor to maintain the power of said compressor at the selected increment of full power.

4,270,362

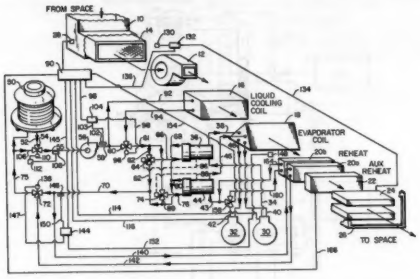
CONTROL SYSTEM FOR AN AIR CONDITIONING SYSTEM HAVING SUPPLEMENTARY, AMBIENT DERIVED COOLING

Frederick N. Lancia; Albert O. Kesterson, both of Columbus; Edward K. Feeney, and Ralph C. Liebert, both of Worthington, all of Ohio, assignors to Liebert Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 779,744, Apr. 29, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,638

Int. Cl.[3] F25B *29/00, 41/00*

U.S. Cl. 62—173 **32 Claims**



1. In an air conditioning system of a variety treating air circulated within a zone to achieve a predetermined temperature within said zone and having a refrigeration system including operatively associated evaporator coil means, condenser means and one or more compressors, said condenser means being associated in heat exchange relationship, by fluid within input and output conduit means, with heat exchanger means situated within an ambient environment remote from said zone, said system further including cooling coil means positioned to effect the cooling of air directed to said evaporator coil means and connected with said conduit means through valve means for selectively receiving said fluid, said valve means being actuable to be selectively positioned in orientations between fully open and closed positions by voltage level responsive actuator means, and humidity sensor means for generating a signal representing a humidity level of said air with respect to a predetermined level, the improved control system comprising:

first temperature sensing means for deriving a first output signal representing the temperature of said air;

comparison network means responsive to said first output signal for deriving a second output singal having a value corresponding with the temperature difference between said predetermined temperature and a higher temperature of said air;

level responsive switching means coupled with said comparison network means for energizing a first said compressor when said second output signal is at a predetermined level corresponding with a said temperature difference of first predetermined magnitude to activate said refrigeration system;

valve control means coupled with said comparison network means and said voltage level responsive actuator means for effecting the actuation of said valve means by said actuator means in substantial proportion with said temperature differences when said differences are less than a second predetermined magnitude; and

said second predetermined magnitude is less than said first predetermined magnitude.

4,270,363

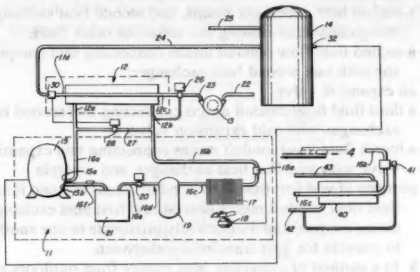
REFRIGERATING MACHINE INCLUDING ENERGY CONSERVING HEAT EXCHANGE APPARATUS

Oscar M. Maring, Clear Lake, and Kenneth W. Schneider, Mason City, both of Iowa, assignors to Schneider Metal Manufacturing Company, Mason City, Iowa

Filed Apr. 16, 1979, Ser. No. 30,700

Int. Cl.[3] F25D *17/06*

U.S. Cl. 62—179 **7 Claims**



3. In a combined refrigerating and water-heating machine including an automated control system for same comprising:

a closed circuit refrigerant system serially including:

a refrigerant compressor including a low pressure inlet port and a high pressure outlet port;

a first portion of a refrigerant to water condenser downstream of said compressor outlet port;

refrigerant expansion means downstream of said condenser;

an evaporator downstream of said expansion means and upstream of said compressor inlet port; and

a water heating system including:

a second portion of said refrigerant-to-water condenser being in heat exchange relation with said refrigeration system;

a water pump upstream of said second portion of said condenser;

hot water storage means positioned downstream of said second portion of said condenser; and

an automated control system including:

a pressure sensor adapted to determine a pressure at a refrigerant outlet of said condenser; and

a water flow regulating valve in said water heating apparatus downstream of said pump and upstream of said second condenser portion, said water flow valve responding to said pressure sensor for controlling water moving through said condenser while maintaining a pre-determined refrigerant pressure range in said refrigerant system.

4,270,364

FREEZING REFRIGERATOR

Toshiyuki Oonishi, Takatsuki; Takeshi Motoyama, Osaka, and Kiyoshi Hatanaka, Takatsuki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,386

Claims priority, application Japan, Nov. 24, 1978, 53-145675

Int. Cl.[3] F25B *41/00*

U.S. Cl. 62—198 **15 Claims**

1. A freezing refrigerator comprising:

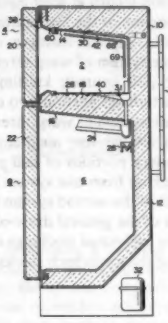
a freezing box, forming a freezing chamber for storing objects to be frozen, which is provided with side plates, top and bottom plates, and a back plate, the top plate having the inner surface slanted downwardly toward the back plate;

first cooling means provided on the outer surface of said bottom plate for cooling said bottom plate thereby to cool the space within said freezing chamber;

second cooling means provided on the outer surface of said top plate for cooling said top plate at lower temperature

than that of said bottom plate thereby to cool the space within said freezing chamber;

heating means provided on the outer surface of said top plate for melting the frost attached onto the inner surface of said top plate;



means for draining off water produced from the slanted inner surface of said upper plate and flowing on the inner surface of said top plate and the inner surface of said back plate; and

means for supplying coolant to said first and second cooling means.

4,270,365

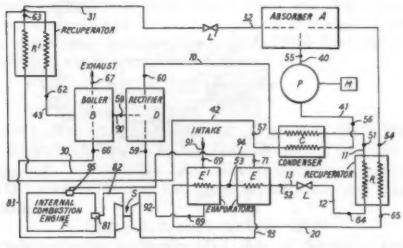
REFRIGERATION APPARATUS

Achilles C. Sampietro, P.O. Box 2484, Delray Beach, Fla. 33444

Filed Jul. 24, 1979, Ser. No. 60,130

Int. Cl.[3] F25B *27/02*; B60H *3/04*

U.S. Cl. 62—238.3 **13 Claims**



1. In an automotive vehicle having an internal combustion engine including an air intake duct and an exhaust duct, the improvement which is a refrigeration system comprising first and second fluids, the second fluid being of greater volatility than the first fluid and the natures and relative concentrations of the fluids being such that they are mutually unreactive and mutually soluble, an absorber for combining the two fluids to form a mixture, said absorber being adapted to reject heat to the atmosphere, a boiler in heat-receiving relationship with the exhaust duct for heating the mixture in said boiler, a rectifier connected to said boiler for receiving heated mixture therefrom to separate said heated mixture into a liquid residue and a vapor of the second fluid, an evaporator in said air intake duct, said evaporator being arranged for heat transfer from intake air of said engine to fluid in said evaporator, a first path for conveying the second fluid from the rectifier to the evaporator, a second path for conveying the second fluid from the evaporator to the absorber, a third path for conveying the residue from the rectifier to the absorber and a fourth path for conveying the mixture from the absorber to the boiler, the first path comprising, in series, an expansion stage of a feed pump, said feed pump having a compression stage powered by expansion of fluid in said expansion stage, first cooling means for condensing vapor of the second fluid and first expansion means for expanding the condensed fluid into the evaporator, the first cooling means comprising at least one heat exchanger for rejecting heat to at least one of the second and fourth paths, the third path comprising, in series, second cooling means for rejecting heat from the liquid residue and second expansion means for expanding the liquid residue into the absorber, the second cooling means comprising at least one heat exchanger for rejecting heat to said mixture in the fourth path, the fourth path including said compression stage of said feed pump for pumping mixture in the fourth path from the absorber to the boiler.

4,270,366

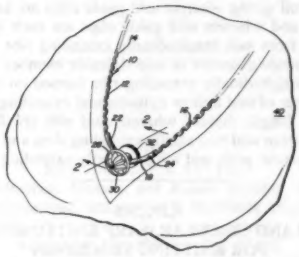
ROTATABLE MOUNTING FOR NECKLACE GEM STONE

James W. Green, P.O. Box 208, Roxboro, N.C. 27573

Filed May 8, 1980, Ser. No. 147,556

Int. Cl.[3] A44C *25/00, 17/02*

U.S. Cl. 63—2 **9 Claims**



1. A necklace including an elongated flexible support member for encircling the neck of a wearer and including a predetermined portion thereof adapted to overlie the central chest portion of the wearer below the neck, said predetermined portion including means defining a journal, an axially short shank member extending and rotatably received through said journal and including first and second ends adapted to extend in forward and rearward directions, respectively, when said support member is being worn as a necklace, gem stone means mounted on said first end of said shank member, the second end of said shank member including lever means comprising radially outwardly extending structure supported therefrom and adapted to frictionally engage opposing clothing or skin of the wearer and to thereby effect angular displacement of said shank member and said gem stone means relative to said journal responsive to lateral displacement of said predetermined portion relative to said underlying clothing or skin.

4,270,367

SPRING LOADED ADJUSTABLE COUPLING

Michael Santore, 1000 Eastwind Ave., Toms River, N.J. 08753

Continuation-in-part of Ser. No. 883,203, Mar. 3, 1978, abandoned. This application Mar. 5, 1979, Ser. No. 17,463

Int. Cl.[3] F16D *3/06*

U.S. Cl. 64—23 **2 Claims**

1. A coupling for drivably connecting a drive shaft and driven shaft comprising:

a. a hollow cylinder adapted at one end to receive a drive shaft;

b. two longitudinally extending grooves formed internally of said hollow cylinder for nearly the entire length thereof;

c. a slideable member for insertion into the other end of said hollow cylinder;

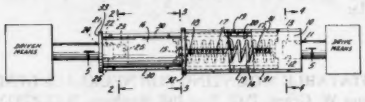
d. two ribs formed on the outside diameter of said slideable

member and extending longitudinally thereof for cooperating with said two longitudinally extending grooves formed internally of said hollow cylinder;

e. a coil spring disposed in said hollow cylinder and compressable by said slideable member;

f. driven shaft receiving means disposed in an end of said slideable member distant from said coil spring for receiving said drive shaft;

g. said hollow cylinder further comprising two axially extending slots formed therein 180° apart for receiving two guide clips formed on one end of said slideable member to position the coil spring in place and to prevent the slide-



able member from becoming disengaged from said hollow cylinder and allowing said slideable member to move axially relative to said hollow cylinder for compressing said coil spring wherein said guide clips are located 180° apart and wherein said guide clips are each located 90° away from said longitudinally extending ribs formed on the outside diameter of said slideable member; and,

h. two longitudinally extending ribs formed on the outside diameter of said hollow cylinder and extending nearly the entire length thereof wherein said ribs are formed 90° away from said two axially extending slots and which ribs are co-axial with said longitudinally extending grooves.

4,270,368

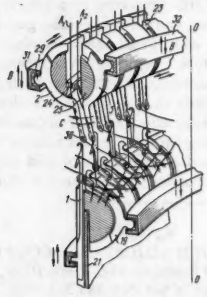
METHOD AND CIRCULAR WARP KNITTING MACHINE FOR KNITTING STOCKINGS

Igor V. Ragoza, Moskovsky prospekt, 7, kv. 114; Petr M. Begunov, ulitsa Shirokaya, 30, kv. 5; Petr J. Vasiljuk, ulitsa Chkalova, 11, korpus 12, kv. 79; Dina N. Tonikian, and Robert T. Tonikian, both of ulitsa Chkalova, 11, korpus 10, kv. 92, all of Vitebsk, U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 72,102

Int. Cl.³ D04B *9/44, 9/12, 9/14, 9/16*

U.S. Cl. 66—13 **12 Claims**



1. A method for knitting stockings on a circular warp knitting machine, comprising: laying two systems of warp threads on knitting needles of the machine by means of two sets of guide needles which are caused to move along the front of and between the knitting needles; knitting a continuous hose consisting of a plurality of stockings of given length from said systems of warp threads under the action of a general draw-off force; each stocking of said continuous hose being made by knitting in a sequence, an overturned welt with one bar tricot stitch from one system of warp threads, and a cylindrical portion of the leg, a tapering portion, an instep, a heel portion, a sole with a tubular toe and pull courses with two-bar tricot stitch from the two systems of warp threads; knitting, in each stocking, after the pull courses are knit, a garterband portion with two-bar tricot stitch from the two systems of warp threads, with the loop length at least equal to the loop length of the cylindrical portion of the leg; knitting between said sole portion and said pull courses at least two courses with one-bar tricot stitch from one system of warp threads to form a boundary portion of the pull courses; knitting between said pull courses and said garterband portion two courses with one-bar tricot stitch from one system of warp threads to form a boundary portion of said tubular toe; maintaining, in knitting said welt and said boundary portions of said pull courses and said tubular toe of a stocking from one system of warp threads, the feed of warp threads of the second system to the stitch forming zone and the action of the general draw-off force; cutting said continuous hose into individual stockings across said boundary portions; and closing the toe in each stocking in a known per se manner.

4,270,369

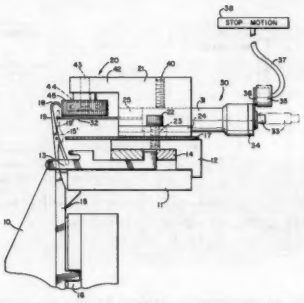
DEVICE FOR DETECTING BROKEN HEADS OF KNITTING MACHINE NEEDLES

Earl R. Quay, Orangeburg, S.C., and Gerhard Jauch, West Lawn, Pa., assignors to Mayer, Rothkopf Industries, Inc., Orangeburg, S.C.

Filed Jan. 22, 1980, Ser. No. 114,233

Int. Cl.³ D04B *35/10*

U.S. Cl. 66—157 **11 Claims**



1. A device for detecting broken knitting machine needles during operation of the knitting machine, comprising

(a) needle sensing means having a retractable needle sensor element adapted to contact the needles when said sensor is in advanced position,

(b) a bracket for supporting the needle sensing means on a knitting machine proximate the needles,

(c) needle deflecting means mounted on the bracket for deflecting unbroken needles away from the needle sensor element and

(d) mounting means for mounting the bracket on a knitting machine to locate the needle deflecting means and the needle sensor element, when said element is in its advanced position, to contact the needles during machine operation, whereby broken needles not deflected by the needle deflecting means are sensed by the needle sensing means.

4,270,370

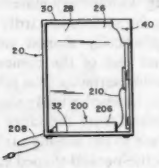
RADIO OPERATED LATCH DEAD-BOLTING SYSTEM

Phil C. Oftelie, 3215 Golden Blvd., Omaha, Nebr. 68123

Filed Nov. 20, 1978, Ser. No. 962,090

Int. Cl.[3] E05B *63/14*

U.S. Cl. 70—118 4 Claims



1. A lock system comprising a vending machine container and a container locking system using both primary lock and radio controlled lock, the system comprising a container having a door jamb, a door moveably mounted in said door jamb, catch means on said door jamb, a primary latch moveably mounted on said door and moving into and out of latching relationship with said catch means on the door, a primary lock assembly having a primary lock mounted on said door, said primary lock assembly being operably correlated with said primary latch and capable of transferring latching and unlatching motions to said primary latch when said primary lock has been unlocked, and a radio lock assembly comprising a radio transmitter outside of said container, a radio receiver inside of said container, a solenoid inside of said container, a power source connected to said solenoid and to said radio receiver in a manner such that said solenoid is operated when said receiver receives a signal from said transmitter, and a dead-bolt operably correlated with said solenoid and with said primary latch so that said dead-bolt prevents unlatching of said primary latch except at times when said solenoid is operated by said transmitter and receiver whereby a thief who has a way of opening said primary lock without force cannot open said door without forceable entry which would cause greater likelihood of detection, said primary lock having a keyhole visible from the outer side of said vending machine container.

4,270,371

DEVICE FOR UNLOCKING AND LOCKING OF DOORS, PARTICULARLY OF MOTOR VEHICLE DOORS

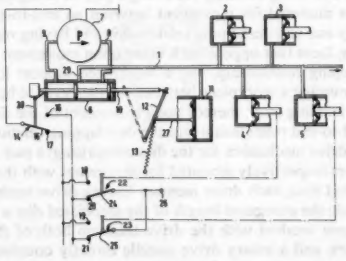
Heinz Kalk, Neu-Isenburg, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 6, 1979, Ser. No. 9,987

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2805004

Int. Cl.[3] E05B *65/38*

U.S. Cl. 70—264 5 Claims



1. In a device for unlocking and locking of doors, particularly of motor vehicle doors, with a pump delivering below atmospheric pressure and high pressure connectable via a two-way valve and a pneumatic line (which valve is actuatable upon each unlocking and locking operation, respectively), with single chamber pneumatic positioning elements which act or a door locking mechanism and with electrical switches for switching the pump on and off, respectively, via a reversing switch, the electrical switches being actuatable by means of a door key and arranged in the lockable doors, respectively, the reversing switch being able to be switched-over by means of a delayed-responding actuating means, the improvement wherein

an additional single chamber pneumatic positioning element constitutes the delayed-responding actuating means,

said additional positioning element is connected to an output of the two-way valve, and via said valve to the pump,

said additional pneumatic positioning element constitutes means for actuating the two-way valve as well as the reversing switch,

said means for actuating the two-way valve as well as the reversing switch is for switching said valve and said reversing switch from one condition into another.

4,270,372

KEY AND LOCK SYSTEM

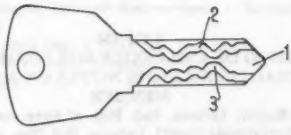
Benno Vonlanthen, Messen, and Robert Walther, Zollikofen, both of Switzerland, assignors to R. Berchtold AG, Zollikofen, Switzerland

Filed Aug. 20, 1979, Ser. No. 67,663

Claims priority, application Switzerland, Aug. 22, 1978, 81001/78

Int. Cl.[3] E05B *19/06*

U.S. Cl. 70—406 5 Claims



1. In a lock and key system including a lock cylinder having a plurality of tumbler shafts with associated tumbler pins of predetermined dimensions and a key having grooves with predetermined width and depth dimensions provided in each side face for engaging said pins, the improvement wherein said key comprises:

a first pair of identical grooves located in opposite side faces of said key symmetrically about the central longitudinal axis of said key for engaging a first set of tumbler pins;

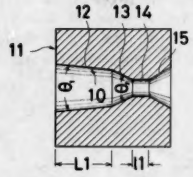
a second pair of identical grooves located in opposite side faces of said key symmetrically about the central longitudinal axis of said key for engaging a second set of tumbler pins; and

one of the width and depth dimensions of said first pair of grooves and the dimensions of said first set of pins are unequal to the width and depth dimensions of said second pair of grooves and the dimensions of said second set of pins, whereby the lock can only be opened by a key having grooves of similar width and depth dimensions and cannot be opened by a key having grooves of different dimensions.

4,270,373
APPARATUS AND PROCESS FOR THE FLUID LUBRICATION DRAWING OF COMPOSITE METAL WIRES

Motoshiro Hirato, Sukegawa-cho 4-18-26; Hazime Kawagoe, Narusawa-cho 4-3-3; Kazuo Abe, Takasuzu-cho 1-21-12, all of Hitachi-shi, Ibaragi-ken; Tsuyoshi Sato, Oaza Kamitetsuna 1113, Takahagi-shi, Ibaragi-ken; Yasuhiko Miyake, Nishinarusawa-cho 4-29-14; Masahiro Nagai, Higashi-cho 4-5-6, both of Hitachi-shi, Ibaragi-ken; Katsuhisa Furuichi, Korokudai Takuno 215, Matsudo-shi, Chiba-ken, and Kiyoshi Shimojima, Ogitsu-cho 3679, Hitachi-shi, Ibaragi-ken, all of Japan

Filed May 30, 1979, Ser. No. 43,817
Int. Cl.³ B21C *9/00, 3/00*
U.S. Cl. 72—41 **18 Claims**



1. A process for the fluid lubrication drawing of a rod in the form of a composite metal wire consisting of a harder metal core and a softer metal cladding surrounding the core comprising the steps of:

preparing a die having an approach which includes a first frustoconical opening having an included angle between 0° and 5° (exclusive of 0°) and a succeeding second frustoconical opening having an included angle between 6° and 20°,

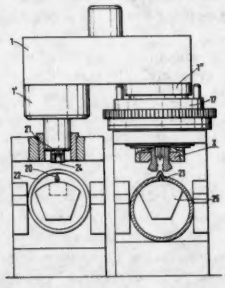
introducing the rod into said die together with a lubricant, and

drawing the rod under fluid lubrication while pressurizing the lubricant in said first frustoconical opening of the die approach.

4,270,374
METHOD OF AND DEVICE FOR FORMING AN INTEGRAL LUBRICATING NIPPLE ON A TUBULAR MEMBER

Manfred Kugler, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Jul. 10, 1979, Ser. No. 56,195
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831187
Int. Cl.³ B21C *37/15;* **B21D** *22/18;* **B21C** *37/28*
U.S. Cl. 72—68 **7 Claims**

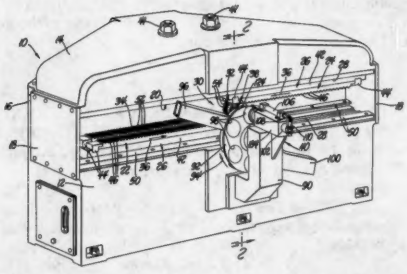


1. Method of forming a lubricating nipple with a conically shaped head on a tubular member, such as an outer bearing tube, comprising the steps of deep drawing the wall of the tubular member outwardly by pressing a portion of the wall outwardly into a die and forming a hollow conically shaped lug with a conical tip projecting outwardly from the outside surface of the tubular member, shaping the outside surface of the conically shaped lug without any material removed therefrom including shaping the surface inwardly of the conical tip and forming a hemispherically shaped surface converging inwardly from the inner end of the conical tip and spaced outwardly from the outside surface of the tubular member and from the inner end of the hemispherically shaped surface forming a bottle-necked surface from the inner end of the hemispherically shaped surface to the outside surface of the tubular member, forming the bottle-necked shaped surface with generally conically shaped outside surfaces diverging in the direction from the hemispherically shaped surface to the outside surface of the tubular member, the step of shaping the outside surface of the conically shaped lug comprising applying the surface of a shaped member which surface has a configuration complementary to the desired outside finished surface of the lubricating nipple into contact with the outside surface of the conically shaped lug, rotating the shaped member relative to the lug, and opening the tip of the lug for forming a passageway into the hollow interior of the lug during the shaping of the outside surface of the conically shaped lug so that the combination of the passageway and the hollow interior form a lubricating bore.

4,270,375
FORMING MACHINE INCLUDING ROTARY DRIVE MECHANISM

Harald N. Jungesjo, Rochester, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

Filed Jul. 10, 1979, Ser. No. 56,362
Int. Cl.³ B21C *37/30;* **B21D** *53/28*
U.S. Cl. 72—88 **7 Claims**

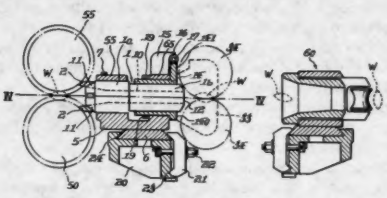


1. In a forming machine including a pair of elongated forming dies mounted for movement between an end-to-end relationship and an overlapping relationship and having respective forming faces that oppose each other upon movement into the overlapping relationship, and a workpiece support for rotatably mounting a workpiece between the dies so as to be formed by the forming faces thereof upon movement of the dies from the end-to-end relationship into the overlapping relationship, a rotary drive mechanism for the dies comprising: a pair of drive members respectively mounted for movement with the pair of elongated dies; each drive member having drive teeth spaced alongside the elongated length of the associated die; a toothed drive gear meshed with the drive teeth on both of the drive members; and a rotary drive spindle directly coupled to the drive gear to move the drive members and the dies under the impetus of driving torque transmitted through the drive gear to thereby form a workpiece mounted between the dies.

4,270,376
TWIST ROLLER GUIDE DEVICE FOR ROLLING MILL USE

Hiroaki Shimada, Sapporo, Japan, assignor to Kotobuki Sangyo Kabushiki Kaisha, Sapporo, Japan

Filed Mar. 12, 1979, Ser. No. 19,777
Int. Cl.[3] B21B *39/28*
U.S. Cl. 72—231 3 Claims

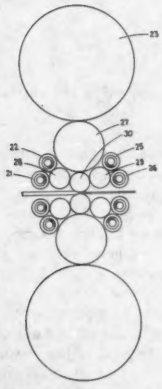


1. A twist roller guide device to be arranged between each two adjacent rolling mills in a set of aligned rolling mills and of the type including a pair of upper and lower twist rollers **34** and a twist guide member **1** having a guide bore **10** formed therein with two diametrally opposite helically extending wall surfaces **10***a* effective to preliminarily twist the stock as the latter proceeds through the guide bore, said device being characterized in that said pair of twist rollers are journaled on respective bearing plates **33** provided on a hollow cylindrical roller holder **14** mounted on a guide box and that the tubular body of said twist guide member is fitted in said guide box with a body portion of said twist guide adjacent to the exit end thereof directly fitted in the cylindrical hollow of said roller holder so that the exit of said twist guide is held in closely spaced opposite relation to said pair of twist rollers; and eccentrically mounted positioning shafts **32**, **38** for said twist rollers, and screw type connecting means **36**, **37** operably connecting said shafts for symmetrical vertical displacement of said shafts **32** and, hence, of said twist rollers **34**.

4,270,377
EIGHTEEN HIGH ROLLING MILL

Robert C. Verbickas, Wolcott, and John W. Turley, Oxford, both of Conn., assignors to T. Sendzimir, Inc., Waterbury, Conn.

Continuation-in-part of Ser. No. 907,502, May 19, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,368
Int. Cl.[3] B21B *29/00*
U.S. Cl. 72—242 5 Claims

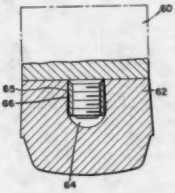


1. An eighteen-high rolling mill roll arrangement, consisting of an upper and lower nine-roll cluster, each of said clusters consisting of a work roll, intermediate roll and back-up roll arranged in the same vertical plane, two side intermediate rolls, one contacting each side of said work roll, and with each of said side intermediate rolls being contacted by two side back-up rolls.

4,270,378
EXTRUSION PUNCH

Thomas A. Brown, Greensburg, and Joseph B. Huber, Acme, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 644,642, Dec. 29, 1975. This application Dec. 4, 1978, Ser. No. 965,927
Int. Cl.[3] B21C *26/00, 23/18*
U.S. Cl. 72—267 4 Claims

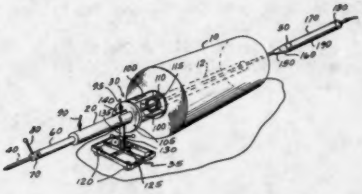


1. A cylindrical end cap for an extrusion punch and formed of a cemented hard metal carbide material which comprises a first face portion for engagement with material to be extruded in a die means and a second face portion for abutting engagement with one end of a cylindrical member, said second face portion having substantially the same outside diameter as the cylindrical member, a central cavity means in said second face portion of said end cap for receiving a reduced diameter portion on the cylindrical member, said cavity having a reverse tapered section and a metal ring fixedly held in said cavity and having internal threads for threaded engagement with the reduced diameter portion.

4,270,379
ROLL STRAIGHTENING TOOL

James Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.

Filed May 3, 1979, Ser. No. 35,686
Int. Cl.[3] B21D *39/08*
U.S. Cl. 72—392 6 Claims



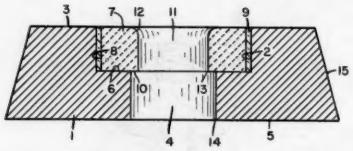
1. In a roll straightening apparatus with a bullet having an expansion shoe mounted thereon, a hydraulic cylinder mechanically mounted within said bullet; and a common hydraulic connection at one end of the bullet wherein the expansion shoe moves laterally in response to hydraulic fluid being supplied to said hydraulic cylinder by means of the common hydraulic connection an improvement comprising: smooth, curved, exterior surfaces on said shoe and on said bullet, a drawbar arranged with a mechanical mating means at one end to connect with the opposite end of said bullet; a hollow piston hydraulic ram with a hollow movable piston adapted to move said drawbar horizontally, having means for mechanical support with respect to a work surface such that the distance between said hollow piston and the work surface is adjustable;

and wherein said means for mechanical support includes an annular shaped restraining member removably mounted and positionable adjacent an end of a hollow core of the roll to be straightened to apply force to the roll to prevent telescoping as said bullet is pulled into the roll from the opposite end by horizontal movement of said drawbar.

4,270,380
METAL SHAPING DIE ASSEMBLY

Suresh T. Gulati, Elmira, and Henry E. Hagy, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 25, 1979, Ser. No. 42,581
Int. Cl.³ B21C *3/02*
U.S. Cl. 72—467 **9 Claims**



1. In a die assembly for shaping metal by extrusion, drawing, ironing and the like, which comprises

a ceramic die nib having at least one aperture therein for passage of metal therethrough to work same whereby the shape and/or cross-section of the metal entering and exiting said nib is dissimilar, the nib having an outer annular surface with a coating thereon, and

steel casing means to support the nib against axial displacement in the direction of the aperture and against tensile failure in use, the casing means having an inner annular surface shrink-fitted onto and around the coated outer annular surface of the nib,

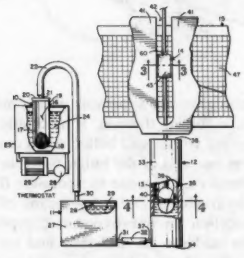
wherein the improvement comprises

the coating being composed of all-crystalline ceramic material having a heating liquidus temperature within the range of 500°–570° C. and which does not become softened or plastic or subject to noticeable creep when reheated in use of the die assembly for and by shaping hot metal.

4,270,381
RECORDING INSTRUMENT TO MEASURE MICROBAL GAS PRODUCTION

David E. Demaray, NW. 140 Windrus St., Pullman, Wash. 99163

Filed Oct. 1, 1979, Ser. No. 80,513
Int. Cl.³ C12Q *1/00;* **G01D** *9/00;* **G01N** *7/00*
U.S. Cl. 73—19 **5 Claims**



1. A measuring instrument to provide a continuous record of the gas production of at least one microbal sample as a function of time, comprising, in combination:

at least one sample container defining an enclosed chamber with means of ingress and egress thereto carrying a microbal sample and communicating for gas transmission with

a fluid reservoir providing an enclosed chamber filled with fluid and communicating in its lowermost portion for fluid transmission with

a vertical measuring cylinder having a vertical height and defining a contained volume greater than the vertical height and contained volume of said fluid reservoir and positioned with its uppermost part vertically above the uppermost part of the fluid reservoir;

a float carried for vertical motion in response to fluid variations within the measuring cylinder and mechanically communicating with

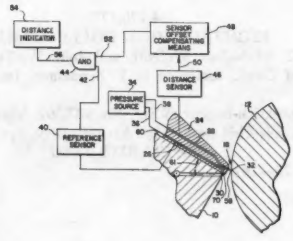
a marker structure having a marking device movable responsive to the motion of the float by a mechanical linkage therebetween; and

a recorder having a elongate tape movable perpendicularly to the motion of the marker and positioned in operative contact therewith to be marked upon by the marker to make a tracing upon the tape indicating the vertical position of the marker relative thereto.

4,270,382
GAP MEASUREMENT APPARATUS

Daniel T. Kamman, Westport, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,347
Int. Cl.³ G01B *13/12*
U.S. Cl. 73—37.5 **7 Claims**



1. Apparatus for measuring the distance between spaced objects, comprising:

a support member;

a reference position sensing means mounted on said support member for producing a signal representative of a selected reference position on a first object;

an object distance sensing means mounted on said support member at a precise known distance from said reference position sensing means for producing a signal representative of the distance to a second object spaced from said object distance sensing means;

means for aligning said support member in a known direction with respect to one of said objects; and

means responsive to said object distance sensing means signal for producing a signal representative of the distance between said selected reference position and said second object when said reference position sensing means is producing a signal representative of said selected reference position.

4,270,383

METHOD AND APPARATUS FOR MEASURING STRENGTH CHARACTERISTICS

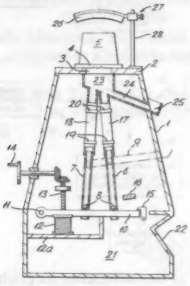
Alfred R. E. Singer, Sketty, and Russell W. Evans, Caswell, both of Wales, assignors to National Research Development Corporation, London, England

Filed Nov. 13, 1979, Ser. No. 93,498

Claims priority, application United Kingdom, Nov. 15, 1978, 44575/78

Int. Cl.³ G01N *3/48*

U.S. Cl. 73—82 **14 Claims**



1. Apparatus to measure strength characteristics of a specimen, comprising:

means to support a specimen;

means to launch at least two projectiles at different speeds towards said specimen, so that said projectiles strike said specimen at different striking speeds and so make different indentations upon it, and

means to ascertain said striking speeds,

whereby said characteristics may then be determined by calculations including said striking speeds and the dimensions of said indentations.

4,270,384

MASS AND FORCE METER

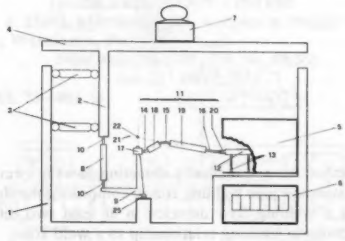
Kaspar Saner, Dübendorf; Johannes Wirth, and Mario Gallo, both of Zurich, all of Switzerland, assignors to Wirth, Gallo & Co., Zurich, Switzerland

Filed Dec. 15, 1978, Ser. No. 969,818

Claims priority, application Switzerland, Jan. 26, 1978, 835/78

Int. Cl.³ G01L *1/10*

U.S. Cl. 73—862.59 **2 Claims**



2. In a mass and force meter, a frame, a load support, a measuring system locking the meter, a force transmission channel with a load-dependent force transmission ration comprising a number of elements, at least one of said elements being swivel lever, said swivel lever being connected to at least one adjacent element by means of a link, said link being fitted to said swivel lever, said force transmitted by said force transmission channel having an action line, said link extending at least partly outside said action line, said link being a flat traction band, said band comprising a flattened fixation part, a middle part, a section with a reduced width, and an elongated end part.

4,270,385

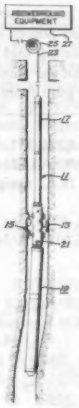
TOOL FOR TESTING EARTH FORMATIONS IN BOREHOLES

Bobby J. Hallmark, Fort Worth, Tex., assignor to Gearhart Owen Industries, Inc., Fort Worth, Tex.

Filed May 25, 1979, Ser. No. 42,431

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—155 **5 Claims**



1. A tool for testing earth formations in boreholes, comprising:

a first elongated tool body section containing formation isolation means including hydraulically controlled extendable and retractable seal pad means and backup pad means, electrically powered means controllable at aboveground equipment for generating and applying hydraulic setting pressure to extend and set said seal pad means and said backup means to accomplish isolation of the formation at the seal pad location, and means for generating signals to be transmitted to aboveground equipment, which signals are a measure of said hydraulic pressure;

said seal pad means and backup pad means being disposed adjacent the lower end portion of said first elongated tool body section;

a second elongated tool body section containing a formation sample chamber;

pivot structure connecting the lower end portion of said first elongated tool body section to the upper end portion of said second elongated tool body section for limited pivoting movement, with the axis of the pivoting movement being normal to the direction of movement of said seal pad means for extension and retraction.

4,270,386

INDIRECTLY HEATED THERMAL FLOWMETER

Charles E. Hawk, Newport News, and Danny K. Livingston, Hampton, both of Va., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 23, 1979, Ser. No. 69,247

Int. Cl.³ G01F *1/68*

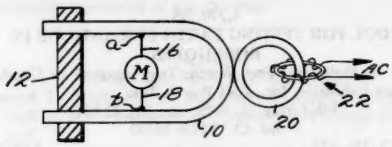
U.S. Cl. 73—204 **18 Claims**

1. A fluid flowmeter comprising:

a segment of electrically and thermally conductive conduit adapted to permit a flow of fluid therethrough, said conduit having ends coupled to a heat sink;

a pair of thermoelectric sensors operatively associated with said conduit at spaced points along the segment;

a loop of thermally and electrically conductive material joined to said conduit so as to establish a metal to metal,



thermally conductive joint between said loop and conduit intermediate the spaced points; and

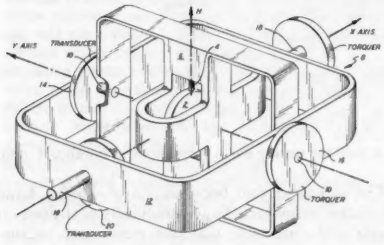
means for inductively heating said loop, the heat induced in said loop being conducted through the metal to metal, thermally conductive joint from the loop to the conduit.

4,270,387

DRIFT COMPENSATED GYROSCOPE

Jay Hoffman, Livingston, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Apr. 30, 1979, Ser. No. 34,109
Int. Cl.[3] G01C *19/14, 19/42*
U.S. Cl. 73—504 **4 Claims**



1. A drift compensated gyroscope including:

an inertial angle rate sensor comprising a fluid filled annulus mounted for rotation about an axis perpendicular to the axis of rotation of the sensor on the inner of a double set of gimbals and having an output signal proportional to the angular rate of the sensor, means for rotating the sensor about the axis of rotation of the sensor;

means for resolving the output signal into components related to the gimbal axes and applying substantially equal and opposite rates proportional to the components to the gimbal axes to cancel out the effects of drift, and

means for measuring the gimbal inertial angles.

4,270,388

METHOD AND APPARATUS EMPLOYING ZERO ORDER RAMAN-NATH DIFFRACTION INFORMATION TO VISUALIZE LONGITUDINAL CHARACTER OF AN ACOUSTIC WAVE FIELD

Reginald C. Eggleton, Indianapolis, Ind., assignor to Indianapolis Center for Advanced Research, Indianapolis, Ind.

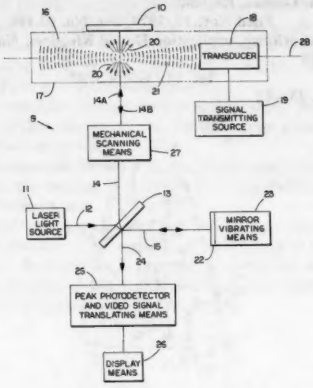
Filed Feb. 12, 1979, Ser. No. 11,447
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—603 **20 Claims**

1. A method employing zero order diffraction information to visualize the longitudinal character of an acoustic field, comprising the steps of:

(a) directing a first portion of a beam of coherent light at normal incidence to a rigid reflective surface from in front thereof;

(b) propogating an acoustic field to interact with the first portion of the beam;

(c) detecting signals derived from the phase change information in the reflected zero order diffraction component of



the first portion of the beam after its double pass through the acoustic field; and

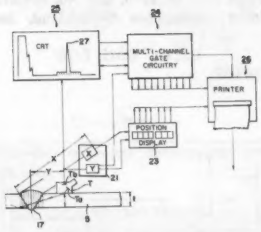
(d) generating a two-dimensional representation of the acoustic field from the detected signals.

4,270,389

METHOD AND APPARATUS FOR THE AUTOMATIC ULTRASONIC FLAW DETECTION

Toshio Shiraiwa; Hisao Yamaguchi; Shigeaki Matsumoto, all of Amagasaki; Masatoshi Tomabechi, and Kimio Nakajima, both of Osaka, all of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Continuation of Ser. No. 849,408, Nov. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 815,823, Jul. 14, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,837
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—612 **12 Claims**



1. A method for automatically detecting flaws in circumferentially extending pipe welding zones, comprising the steps of:

moving a welding flaw detector in at least two different directions in tracking relationship to a weld zone;

subdividing the width of said weld zone into a plurality of areas;

transmitting pulsed energy obliquely to said weld zone from a first transmitter, and alternately periodically transmitting pulsed energy perpendicularly to said weld zone from a second transmitter;

periodically calibrating the flaw detection using the energy transmitted from said second pulse transmitter;

generating output signals from a plurality of gate circuits

each respectively responsive to the echo signals produced by said pulsed energy from a specified one of said areas;

generating position signals representative of the position of said flaw detector from a reference point; and

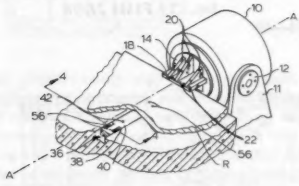
displaying said output signals and said position signals in associated relationship to indicate any welding flaws and their respective positions in each one of said plurality of areas of the weld zone.

4,270,390

VIBRATION TEST BEARING TABLE APPARATUS AFFORDING A SINGLE DEGREE OF FREEDOM TEST PIECE PATH

David V. Kimball, Monrovia, and Daniel L. Baughn, Pomona, both of Calif., assignors to Kimball Industries, Inc., Monrovia, Calif.

Filed May 7, 1979, Ser. No. 36,343
Int. Cl.³ B06B *1/10*
U.S. Cl. 73—663 **14 Claims**



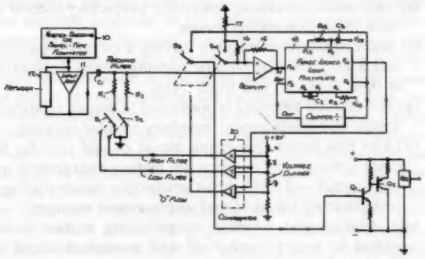
1. In a vibration test, bearing table apparatus, comprising a support block having a surface slidably supporting a test-piece-carrying slip plate intended to oscillate along a single predetermined test axis at a desired test frequency responsive to shaker head driving of the slip plate, wherein said driving tends to impart spurious cross-axis pitch, jaw and roll test piece motions relative to the intended test axis, the improvement comprising means within the locus of sliding engagement including a shaft and a bearing assembly comprising a coaxial series of bearings depending from the underside of said slip plate in journaling relation to said shaft distributively coupling said slip plate and support block together in a manner maintaining said test piece on a single degree of freedom path coincident with said intended test axis in test piece spurious yaw, pitch and roll motion blocking relation.

4,270,391

FREQUENCY-RESPONSIVE FILTER FOR FLOWMETER TRANSMISSION SYSTEM

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Aug. 24, 1979, Ser. No. 69,361
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 **9 Claims**



1. A transmission system for a vortex-shedding or swirl-type flowmeter whose meter frequency lies in a low-frequency range and is a function of the flow rate of the fluid being metered, said system comprising:

A. an input amplifier responsive to the meter signal to yield an amplified signal which depends on the frequency vs. gain characteristics of the amplifier;

B. circuit means including a frequency multiplier to convert said amplified signal to an output signal which lies in a high frequency range, said circuit means also yielding a voltage which is an analog of said meter frequency;

C. a tracking filter interposed between said amplifier and said circuit means to characterize the amplifier response to reduce the amplification gain thereof below a selected frequency level; and

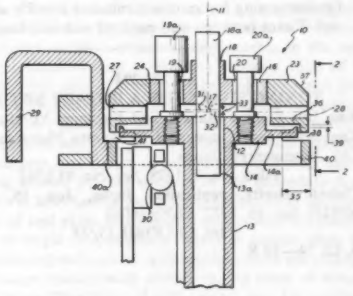
D. a comparator assembly coupled to said filter to compare said analog voltage with a series of progressively increased reference voltages each of which represents a predetermined frequency level, the assembly functioning to render the filter operative in a stepwise manner whereby when the meter frequency reaches any one of the predetermined levels, the filter then acts effectively to reduce the amplification gain to attenuate frequencies below that level.

4,270,392

LOW COST FLEXURE ASSEMBLY

Walter J. Krupick, Succasana, N.J., assignor to The Singer Company, Little Falls, N.J.

Continuation of Ser. No. 716,602, Aug. 23, 1976, abandoned. This application Sep. 13, 1978, Ser. No. 941,990
Int. Cl.³ G01C *19/18*
U.S. Cl. 74—5 F **6 Claims**



1. A two axis flexure assembly for a two axis, tuned, rotor gyro comprising:

first means having only two flexures separated by 180° from each other for tilting said gyro rotor in a first flexure plane perpendicular to the spin axis plane of said gyro,

second means nested within a central opening of said first means and having only two flexures separated 180° from each other, said flexures of said second means being also separated 90° from said flexures of said first means, said second means tilting said gyro rotor in a second flexure plane orthogonal to both said first flexure plane and said gyro spin axis plane, said first and second flexure planes being axially spaced by a predetermined distance from each other;

means mounted on said second means for adjusting the unbalance and inertia of said gyro; and

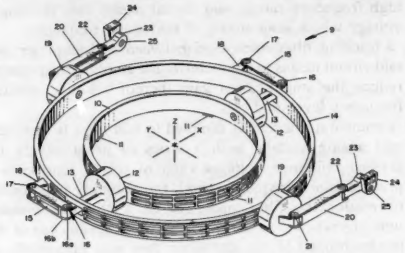
a transverse slot in said first means below each of said two flexures.

4,270,393

ISOLATION SYSTEM

Norman A. Osborne, Englewood, and Robert L. Gates, Littleton, both of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 12, 1979, Ser. No. 19,680
Int. Cl.[3] G01C *19/16*
U.S. Cl. 74—5 F 5 Claims



1. Apparatus for mounting a payload on a base, said apparatus being oriented with respect to arbitrary X, Y and Z axes with said axes being mutually perpendicular and meeting at a common center, and said payload containing a torque-producing device which spins about said X axis, wherein the torque generated about the X axis in the payload is communicated to the base through a stiff linkage in the rotational degree of freedom about the X axis comprising:

first and second support frames,

means for mounting said payload on said first support frame,

means for mounting said first support frame on said second support frame, and

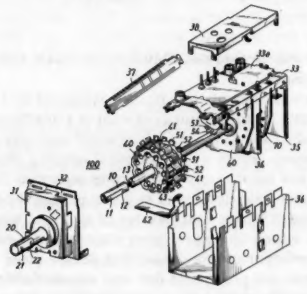
means for mounting said second support frame on said base, said mounting means including linear dampening means for dampening forces communicated linearly along the Y and Z axes between said payload and said base.

4,270,394

TONING SHAFT FOR A ROTARY SWITCH

Katsuo Ito; Bunjiro Murata, and Kazunori Yoshimura, all of Kanazawa, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,767
Claims priority, application Japan, Jun. 16, 1977, 52-79635[U]; Jun. 16, 1977, 52-79636[U]
Int. Cl.[3] F16H *35/18*
U.S. Cl. 74—10 R 34 Claims



1. A rotary shaft for use in a television tuner having a shield casing and a rotary switch including a plurality of electronic switching portions disposed therein along said rotary shaft, said shaft adapted to rotate said switching portions of said rotary switch for the selection of a plurality of television channels, said shaft comprising:

an elongated solid rod circular in section and molded of a synthetic resin material, said rod having a flat at one end thereof lying along a chord of the cross section of said shaft in a plane substantially prallel to the longitudinal axis of said shaft with an arcuate transitional surface joining said flat to the remainder of said shaft, said flat adapted to engage a control knob;

said shield casing supporting said shaft and being partitioned into a plurality of compartments, each enclosing an individual switching portion of said rotary switch;

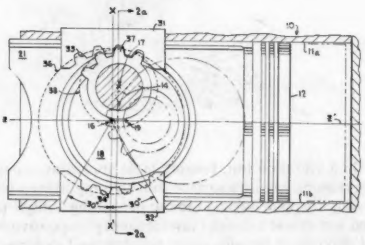
said rotary shaft extending through each said plurality of compartments.

4,270,395

MOTION TRANSLATING MECHANISM

Reed H. Grundy, 4081 W. Benden Dr., Murrysville, Pa. 15668

Division of Ser. No. 811,529, Jun. 30, 1977, Pat. No. 4,173,151.
This application Jun. 13, 1979, Ser. No. 48,278
Int. Cl.[3] F16H *21/18*
U.S. Cl. 74—49 13 Claims



1. A reciprocating to rotary motion mechanism including in combination

(a) a crankshaft having a crank arm with an eccentric pin integrally secured to said crank arm, said crankshaft mounted so that said crank arm and said eccentric pin rotate about a crankshaft axis,

(b) a circular linkpiece having a center axis parallel to said crankshaft axis, said circular linkpiece having an opening positioned eccentric to said circular linkpiece center axis,

said crank arm eccentric pin positioned within said circular linkpiece eccentric opening in a manner that allows relative rotary movement between said eccentric pin and said circular linkpiece in a path in a fixed plane,

(c) at least one first thrust converting means secured to said circular linkpiece for rotation therewith,

(d) a displacement member mounted in a sliding abutting relationship between a pair of walls for reciprocating motion therebetween,

(e) said walls containing internally projecting second and third thrust converting means,

(f) said displacement member having a circular opening in said fixed plane, said circular opening having a central axis at right angles to said fixed plane,

(g) said circular linkpiece is positioned in mating relationship within said displacement members circular opening,

(h) said first thrust converting means of said circular linkpiece coming into consecutive mating engagement with said second and third thrust converting means during the reciprocating travel of said displacement member,

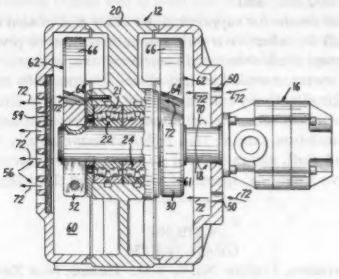
said displacement member reciprocating motion is converted to rotary motion of said crankshaft about said crankshaft axis through the relative motion of said displacement member, said circular linkpiece and said integrally secured eccentric pin of said crankshaft.

4,270,396

VIBRATOR

John Fallows, Little Rock, Ark., assignor to Global Manufacturing, Inc., Little Rock, Ark.

Filed May 23, 1979, Ser. No. 41,638
Int. Cl.³ B06B *1/16*
U.S. Cl. 74—87 **8 Claims**



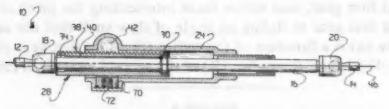
1. A rotary vibrator comprising a housing, a shaft mounted on bearing means in said housing and rotatable about its longitudinal axis, means for rotating said shaft about said axis, at least one eccentric weight in said housing, each said eccentric weight having a hub portion mounted on said shaft for rotation therewith and an eccentric portion extending outwardly from said hub portion generally in a plane perpendicular to said axis, each said eccentric portion having a leading edge extending generally radially with respect to said axis, air inlet and outlet passages in said housing, and means on said leading edges for forcing air axially through said housing upon rotation of said eccentric weight for drawing air in through said air inlet passages and pushing said air out through said outlet passages thereby to ventilate and cool the vibrator bearing means.

4,270,397

ROTATABLE SLEEVE RACK

Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hitchin, England

Filed Mar. 13, 1978, Ser. No. 886,142
Int. Cl.³ F16H *27/02, 1/04;* B62D *1/20*
U.S. Cl. 74—89.18 **5 Claims**



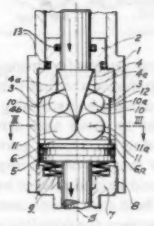
1. An apparatus for use in transmitting force with variable ratio gearing, said apparatus comprising a housing, a rotatable drive member mounted in the housing, said rotatable drive member being displaceable along its axis of rotation and relative to the housing; a rack gear comprising an array of helically formed teeth disposed on said drive member; a rotatable pinion gear mounted in the housing and engaging with the rack gear to effect axial displacement of said drive member upon rotation of the pinion gear; a cam track disposed on said drive member, at least a portion of said cam track being co-extensive with said rack gear in the direction of the axis of rotation of said drive member; follower means disposed in engagement with said cam track for effecting rotational movement of said drive member relative to said pinion gear upon axial displacement of said drive member; each of said rack gear teeth extending only part way around the periphery of the drive member to an extent that the rack gear maintains engagement with the pinion gear throughout the intended rotational movement of the drive member; a side surface disposed on said drive member to be substantially co-extensive with said rack gear and being provided by the part periphery of the drive member into which said rack gear teeth do not peripherally extend, and support means for at least partially supporting said drive member, said support means being mounted by the housing and slidably engaging the side surface substantially in a plane which extends radially of the drive member and which includes the region of engagement between the rack gear and the pinion gear.

4,270,398

MECHANICAL AMPLIFIER

Franz Arnold, Spatzenweg 20, D-8960 Kempten, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,701
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 7830221[U]
Int. Cl.³ B25B *1/14;* F16H *21/44*
U.S. Cl. 74—110 **13 Claims**



1. In a mechanical amplifier comprising a wedge-shaped primary member which is displaceable along a plane of symmetry between a first pair of two rollers which are arranged in mirror-image relation with respect to said plane of symmetry and a secondary member which is displaceable in the same direction, the improvement comprising wherein each of the rollers of said first pair of rollers is freely movable and bears both against a stationary first bearing surface and on a parallel freely moveable roller of a second pair of rollers which is arranged between said first pair of rollers and said secondary member, wherein said rollers of said second pair bear against co-operating second bearing surfaces of the secondary member, wherein at least one of the bearing surfaces for the rollers on one side of said plane of symmetry makes with the plane of symmetry an angle of inclination which is smaller than 90°, wherein centering surfaces for said second rollers are arranged in mirror-image relation with respect to said plane of symmetry and between the rollers of said second pair for centering said second pair of rollers in an initial position of said amplifier, and wherein the rollers which are in contact with each other and their said bearing surfaces are held in continuous engagement by a spring assembly which acts on said secondary member and the roller diameters, the angles of inclination of the bearing surfaces and the taper angle of said primary member are so selected that, in all operating positions of said amplifier, the axes of two rollers which are in contact with each other always lie on the side of the connecting line between the contact lines of said rollers with their respective said bearing surfaces which is toward said plane of symmetry.

4,270,399

COUNTER DRIVE MECHANISM

Enno A. Knief, Watertown, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 15, 1979, Ser. No. 48,900
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—129 **21 Claims**

1. A drive mechanism for converting reciprocating motion

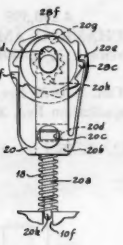
of a drive member to intermittent progressive motion of a driven member comprising:

a driven member comprising first and second ratchets, each including a series of ratchet teeth;

a reciprocating drive member operable to execute an impulse stroke followed by a return stroke in response to actuation thereof;

means for actuating said drive member;

and said drive member comprising a first driving pawl en-



gaging said first ratchet for driving said driven member a first increment during the first part of said impulse stroke and a second driving and stopping pawl that engages said second ratchet to drive said driven member a second increment during the second part of said impulse sroke terminating at the end of said impulse stroke in firm engagement of said second ratchet by said driving and stopping pawl to hold said driven member in a stop position whereby to increase the coupling efficiency between said drive member and said driven member.

4,270,400

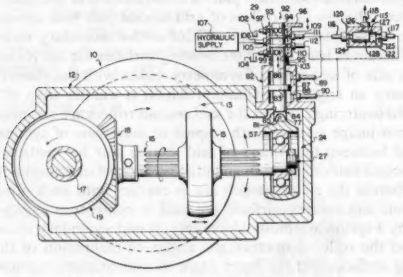
CONTINUOUSLY VARIABLE TRACTION DRIVE TRANSMISSION

Eben V. Fodor, 3611 35th St., NW., Washington, D.C. 20016

Filed Feb. 21, 1980, Ser. No. 123,730

Int. Cl.³ F16H *15/08*

U.S. Cl. 74—194 **16 Claims**



1. In a continuously variable transmission of the type having

a frame;

a disc having a planar face;

a first shaft rigidly coupled to said disc;

means for coupling said first shaft to said frame for rotation about a fixed axis;

a second shaft;

a roller coupled to said second shaft for rotation therewith, said roller being axially movable along said second shaft;

means, coupled to said frame, for rotatably supporting said second shaft, said roller thereon being in frictional contact with said planar face;

a third shaft rotatably mounted to said frame; and

means for transmitting rotation between said second shaft and said third shaft;

the improvement wherein

said means for rotatably supporting said second shaft includes

first means for supporting an end of said second shaft for pivotal movement about a transverse axis thereof, which transverse axis is perpendicular to the planar face of said disc; and

second means for supporting the other end of said second shaft for selective translation in directions to pivot said second shaft about said transverse axis; and

motive means, coupled to said means for rotatably supporting, for selectively translating said other end in directions to pivot said second shaft about said transverse axis,

such translation causing said roller to move axially of said second shaft, and radially of said disc, thereby varying the relative rotational speeds of said first and third shafts.

4,270,401

GEAR TEETH

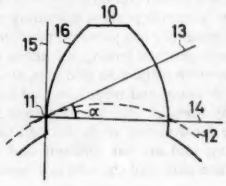
Robert Davidson, Hadlow No. 4, R.D., Timaru, New Zealand

Filed Sep. 12, 1978, Ser. No. 941,788

Claims priority, application New Zealand, Sep. 16, 1977, 185199

Int. Cl.³ F16H *55/08, 1/28*

U.S. Cl. 74—462 **5 Claims**



1. A gear assembly comprising a first gear and a second gear surrounding said first gear in meshed engagement therewith, said first gear having teeth for engaging corresponding root portions in said second gear, said first and second gears defining pitch circles about their centers of rotation, each of said teeth having active faces defined by first circular arcs, the centers of curvature of said first arcs being on the pitch circle of said first gear, said active faces intersecting the pitch circle of said first gear to define an angle of slew such that the angle of slew (α) is a function of the radius (r) of the first gear pitch circle divided by the radius (R) of the second gear pitch circle.

4,270,402

SPEED CHANGING DEVICE FOR A BICYCLE

Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Sep. 28, 1978, Ser. No. 946,725

Claims priority, application Japan, Oct. 5, 1977, 52/120603; Oct. 5, 1977, 52/120604

Int. Cl.³ B60K *20/00*

U.S. Cl. 74—473 R **4 Claims**

1. A bicycle speed changing device for controlling a front and a rear derailleur comprising:

a base member having a pivot arm;

one control lever rotatably supported to said pivot arm;

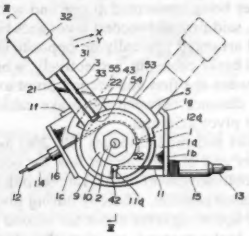
a first and a second winding body independently rotatable on said pivot arm and positioned axially of said control lever,

a first control wire carried by said first winding body and connecting said first winding body with said front derailleur, a second control wire carried by said second winding

body and connecting said second winding body with said rear derailleur; and

coupling means for selectively coupling said control lever with one of said first and second winding bodies such that turning rotation of said control lever is imparted to said one selected winding body,

said coupling means comprising a first and a second engaging portion respectively provided at said first and second winding bodies and at least one retainer supported to said lever so as to be movable radially of each of said winding bodies and rotating integrally with said control lever and engageable selectively with one of said engaging portions for causing one of said winding bodies to rotate integrally with said control lever, said first winding body having a circular outer periphery in which said first engaging portion is included and said second winding body having a swollen portion larger in diameter than said first winding body, said larger diameter portion providing an elongate slot in the shape of a circular arc extending along the rotation direction of said retainer, said slot having at the inner surface thereof said second engaging portion which is engageable with said retainer, said slot also having a radially outward inner surface having a larger diameter than an outer diameter of said first winding body to provide an interval between said radially outward inner surface of said slot and the outer periphery of said first winding body which is larger than the thickness of said retainer, said interval extending radially of said winding body and providing a neutral zone in which said retainer is not engaged with said first and second engaging portions.



4,270,403

PUSH-PULL CABLE MOTOR TRUCK REMOTE GEAR SHIFT SYSTEM AND TWO-DIMENSIONAL MOTION CONVERSION AND TRANSMISSION APPARATUS THEREIN

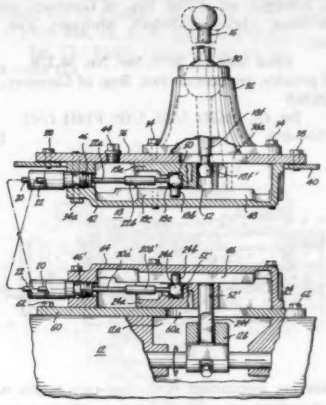
Harold H. West, Seattle, Wash., assignor to Cablecraft, Inc., Tacoma, Wash.

Filed Feb. 26, 1979, Ser. No. 14,842

Int. Cl.[3] G05G *9/16*; F16C *1/12*

U.S. Cl. 74—473 R **11 Claims**

1. Motion conversion, transmitting and reconversion apparatus comprising a master unit and a remote slave unit each including a translator member guided therein for rotational motion about an axis and for lineally defined translational motion in a motion plane perpendicular to said axis, means to actuate the master unit translator member to execute such motions, motion transmitting means comprising a pair of flexible push-pull cables interconnecting said translator members at respective spaced locations on each for effecting rotational and translational motions of the slave unit translator member substantially duplicative of such motions of the master unit translator member, and output coupler means on the slave unit translator member.



4,270,404

X-Y MOVEMENT MECHANISM

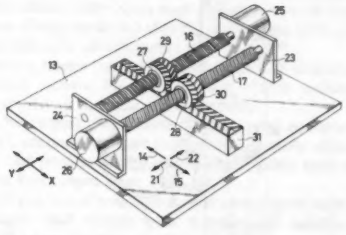
Makoto Murakoshi, and Tamotu Yoshizawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Apr. 24, 1979, Ser. No. 32,823

Claims priority, application Japan, Apr. 27, 1978, 53/50398

Int. Cl.[3] G05G *11/00*; F16H *25/20*

U.S. Cl. 74—479 **13 Claims**



1. An X-Y movement mechanism, comprising a right-handed screw and a left-handed screw arranged in parallel with each other; drive means for individually rotating said lead screws; gear means mounted on said screws; a base plate; a stage movable with respect to said base plate; and a rack fixedly provided on said stage to engage said gear means wherein said gear means operate as a gear transmission mechanism permitting said rack to move in a direction perpendicular to the direction of the axes of said screws or in the direction of the axes of said screws.

4,270,405

STEERING MECHANISM WITH TIME DERIVATION

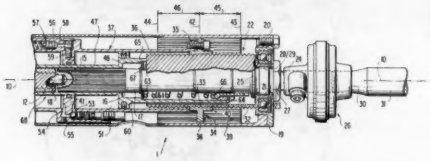
Klaus Niemann, Welzheim; Helmut Wulf, Ostfildern, and Peter Hauck, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,278

Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820563

Int. Cl.[3] B62D *1/20, 5/06;* F16H *1/45*

U.S. Cl. 74—499 15 Claims



1. A steering mechanism with time-rate action which includes a summing gear means for operatively connecting a servo means dependent upon an angular velocity of a steering spindle means with a servo means dependent upon an angle of turning of the steering spindle and with a servo means dependent upon an angle of turning of steered vehicle wheels, and a resilient supporting means for supporting a gear member of the summing gear means associated with the servo means dependent upon the angular velocity, characterized in that means are provided for positively turning off the servo means dependent upon the angular velocity with respect to the summing gear means if the steering spindle means is turned through an angle greater than a predetermined limiting angle.

4,270,406

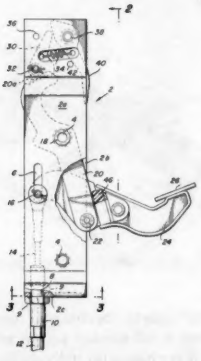
BRAKE CABLE OPERATING MEANS AFFORDING A MECHANICAL ADVANTAGE

Eugene C. Lipshield, and Billy G. Boyer, both of Moberly, Mo., assignors to Orscheln Co., Moberly, Mo.

Filed Jan. 15, 1979, Ser. No. 3,132

Int. Cl.[3] G05G *1/04, 5/06*

U.S. Cl. 74—516 7 Claims



1. Apparatus for axially displacing an inner cable member (**14**) of a parking brake assembly (**12**) relative to a coaxially arranged outer cable member (**10**), comprising

(a) a housing (**2**) including a pair of opposed parallel spaced side walls (**2a**, **2b**) containing opposed generally longitudinally extending guide slots (**6**), respectively, said housing being adapted for connection at one end with said outer cable member;

(b) a brake cable pin (**16**) extending between, and generally normal to, said side walls, said brake cable pin having end portions extending within said guide slots, respectively, said pin being adapted for connection with one end of the inner cable member;

(c) means for laterally displacing said brake cable pin in parallel relation in a direction longitudinally of said guide slots from an initial brake-released position toward a brake-engaged position, including

(1) a ratchet link (**20**) pivotally connected intermediate its ends with said housing for movement about a fixed first pivot axis (**18**);

(2) an operating lever (**24**) pivotally connected intermediate its ends with one end of said ratchet link for pivotal movement about a second pivot axis (**22**), said operating lever being connected at one end with said brake cable pin, said first and second pivot axes being parallel with, and arranged generally on opposite sides of, the axis of said brake cable pin, respectively, whereby the distance between the first and second pivot axes is greater than the distance between the brake cable pin axis and the first pivot axis; and

(3) pawl and ratchet means (**30**, **20***a*) associated with the other end of said ratchet link for normally preventing pivotal movement of said ratchet link toward the brake-released position, whereby during pivotal movement of said operating lever about the second pivot axis toward the brake-engaged position the second pivot axis is displaced by the simultaneous pivotal movement of said ratchet link to increase the mechanical advantage applied to said brake cable pin by said operating lever.

4,270,407

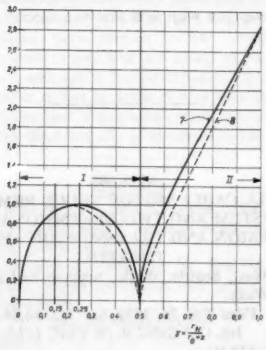
CAMS FOR ACTUATING THE VALVES OF A RECIPROCATING MACHINE

Gerhard Deschler; Hans Gebhardt, and Dieter Wittmann, all of Nuremberg, Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,743

Int. Cl.[3] F16H *53/06, 25/16*

U.S. Cl. 74—569 2 Claims



1. A cam for actuating valves of reciprocating machines in which the valve is opened by a sliding contact flat face cam follower riding on said cam in opposition to the force of a closing spring and which will provide an optimum load carrying lubricating film on the nose of the cam and increase the life of the cam so that it approaches that of a roller comprising a cam body having an outer peripheral cam surface bearing on said flat face of the valve, said cam surface curvature being such that it has a hydrodynamic rating indexy in the range

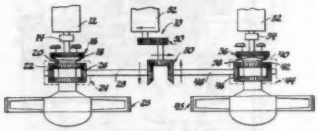
$0.15 \leqq \gamma \leqq 0.25$, where said hydronamic rating index is calculated from the formula $r_N/(r_g+Z)$ where r_N is the radius of curvature of the cam; r_G is the base circle radius of the cam and Z is the respective cam lift.

4,270,408

GEAR DRIVE FOR GAS TURBINE ENGINE

Douglas A. Wagner, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1978, Ser. No. 951,751
Int. Cl.³ F16H *37/06, 35/08, 57/00*
U.S. Cl. 74—661 **2 Claims**



1. In a multiple engine drive system having first and second engines with an output shaft connected to drive a load and including a load sharing cross-over drive between each of the engine output shafts to maintain power transfer to each of the loads when one of the engines is disconnected from the system, the improvement comprising:

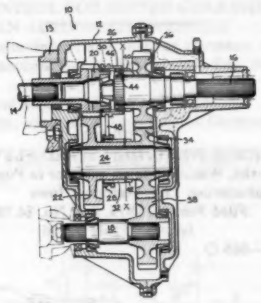
a right angle gear box assembly connecting each of the output shafts to the cross-over drive, each gear box assembly having an input gear connected to one of the output shafts and an output gear connected to the cross-over drive, bearing means to support said input and output gears for limited axial movement, said input gear and said output gear defining a first torque loop and having meshed gear teeth thereon with a tooth geometry to produce an outboard thrust on said input gear during normal drive between the input and output gears, means for limiting outboard axial movement of said input gear in response to the output thrust imposed thereon during power transfer from the engine to the gear box assembly and the cross-over drive, idler gears in said gear box each having gear teeth thereon in meshed engagement with said gear teeth on said input and output gears respectively to define a second torque loop to split torque transfer from each of the output shafts to each cross-over drive during transfer of torque from the input gear to the output gear in response to normal engine operation, each of said right angle gear box assemblies having a reverse torque imposed thereon when the engine connected thereto is disconnected from the system wherein power is transferred from a cross-over drive to an output gear to drive it in a reverse direction and to impose a reverse torque and drive on the input gear, said input and output gear teeth geometry including means responsive to the reversal of torque through said right angle gear box assembly to produce a reverse thrust on the input gear to shift it inboard of the gear box assembly to maintain a continued drive mesh between the input, output and idler gears to maintain a reverse load carrying gear path from the output gear to the input gear and a reverse load carrying path from the output gear through the idler gears thence to the input gear whereby load sharing is maintained in both directions of torque transfer through the gear box assembly thereby to enable use of reduced weight component parts in the gear box assembly to transfer power from each of the engines to their respective output shafts during both normal engine operation and disconnected engine operation wherein power is tranferred to both of the engine loads from one of the engines.

4,270,409

TORQUE TRANSFER MECHANISM

Jack G. Glaze, 1209 Roby, Stoughton, Wis. 53589, and Robert B. Overbeek, 105 N. Pontiac, Janesville, Wis. 53545

Filed Jan. 18, 1978, Ser. No. 870,532
Int. Cl.³ F16H *37/06;* **B60K** *17/34*
U.S. Cl. 74—665 GA **6 Claims**



1. A torque transfer mechanism having a high speed power path and a low speed power path, said mechanism comprising:

a rotatable input shaft;

a first rotatable output shaft coaxial with said input shaft;

an intermediate shaft radially spaced from said input shaft;

an input gear set including a drive gear connected to said input shaft and a driven gear supported for rotation on said intermediate shaft and in constant meshing engagement with said drive gear;

an output gear set including a first output gear supported for rotation on said first output shaft and an intermediate gear supported for rotation on said intermediate shaft and in constant meshing engagement with said first output gear;

first clutch means for establishing the high speed power path including clutch teeth on said drive gear, clutch teeth on said first output shaft and clutch teeth on said first output gear, and a first axially shiftable clutch collar in constant engagement with said first output shaft clutch teeth and slidably engageable with said drive gear clutch teeth and said first output gear clutch teeth;

second clutch means for establishing the low speed power path including clutch teeth on said drive gear and clutch teeth on said intermediate gear, and a second axially shiftable clutch collar in constant engagement with said driven gear clutch teeth and slidably engageable with said intermediate gear clutch teeth;

operating means connected to said first and second shiftable clutch collars for shifting said clutch collars simultaneoulsy in the same axial direction;

said driven gear clutch teeth having an end portion adjacent said intermediate gear substantially radially aligned with an end portion of said output shaft clutch teeth adjacent said first output gear;

an end portion of said output gear clutch teeth adjacent said output shaft clutch teeth substantially radially aligned with an end portion of said intermediate gear clutch teeth adjacent said driven gear;

said first and second clutch collars having a first position wherein said first clutch collar is engaged with said drive gear clutch teeth for establishing the high speed power path between said input shaft and said first output shaft and wherein said second clutch collar is disengaged with said intermediate gear clutch teeth;

said first and second clutch collars having a second position wherein said first clutch collar is engaged with said first output gear clutch teeth and said second clutch collar is disengaged with said intermediate gear clutch teeth; and

said first and said second clutch collars having a third posi-

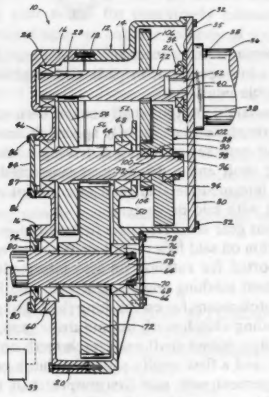
tion wherein said first clutch collar is engaged with said first output gear clutch teeth and said second clutch collar is engaged with said intermediate gear clutch teeth for establishing the low speed power path between said input shaft and said first output shaft.

4,270,410

GEARBOX WITH HIGH SPEED FLYWHEEL

Saul Herscovici, Waterloo, Iowa, assignor to Power Engineering and Manufacturing, Ltd., Waterloo, Iowa

Filed Feb. 23, 1979, Ser. No. 14,700
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—665 Q **8 Claims**



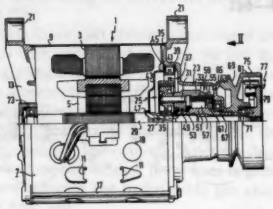
1. A speed reducer gearbox comprising,
a housing means,
an input shaft rotatably mounted in said housing means and adapted to be connected to a power source, said input shaft having a toothed gear means thereon,
an intermediate shaft rotatably mounted in said housing means and having a first toothed gear means thereon which is in mesh with said toothed gear means on said input shaft, said intermediate shaft having a second toothed gear means thereon,
an output shaft rotatably mounted in said housing means and adapted to be connected to a driven member, said output shaft having a toothed gear means thereon which is in mesh with said second toothed gear means of said intermediate shaft,
a flywheel,
means for rotatably mounting said flywheel in said housing means,
said flywheel including a flywheel portion and a toothed gear portion rotatable in unison, and
additional toothed gear means on one of said shafts, said additional toothed gear means being in mesh with said flywheel toothed gear portion and of such relative size that said flywheel is rotated at a higher angular velocity than said one shaft,
said flywheel being rotatably supported on another one of said shafts.

4,270,411

WASHING MACHINE DRIVE ASSEMBLY

Giuseppe Pengo, Pordenone, Italy, and Hans J. Schwerdhöfer, Schweinfurt, Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany and S.O.L.E. Societa Opitergina Lavorazioni Elettroplastiche S.p.A., Oderzo, Italy

Filed Apr. 17, 1979, Ser. No. 30,857
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817349
Int. Cl.³ F16H *3/74*; F16D *47/00*
U.S. Cl. 74—752 E **19 Claims**



1. A washing machine drive mechanism comprising: a variable speed electric motor including a motor shaft; a hollow shaft coaxial with said motor shaft and rotatably supported relative thereto; planetary gearing located adjacent said electric motor and including a sun gear affixed with said motor shaft and a carrier gear rotatably supported on said hollow shaft; a driven member drivingly connected with said hollow shaft; clutch means for selectively drivingly engaging said motor shaft with said driven member directly as well as through said planetary gearing and said hollow shaft, said clutch means including centrifugal friction clutch means operatively interposed between said motor shaft and said driven member to effect said direct drive therebetween and overrunning clutch means to effect driving of said driven member by said motor shaft through said planetary gearing and said hollow shaft; a motor housing for said electric motor including motor housing flange means extending from said motor housing and enclosing said planetary gearing, said motor housing flange means being constructed as a gearing housing for said planetary gearing and for said overrunning clutch means; and bearing means for supporting said motor shaft through said hollow shaft on said motor housing flange, said motor shaft being supported on one side thereof exclusively by said hollow shaft on that part of said motor housing flange means which forms said gearing housing.

4,270,412

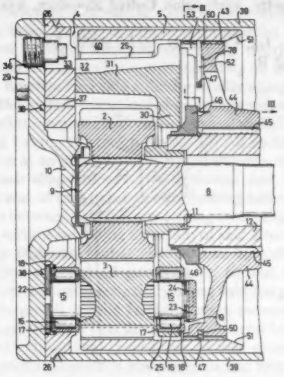
HUB GEAR FOR WHEELED VEHICLES

Per A. O. Beijer, Järna, and Lars O. Strandas, Södertälje, both of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Feb. 1, 1979, Ser. No. 8,573
Claims priority, application Sweden, Feb. 8, 1978, 7801453
Int. Cl.³ F16H *1/28, 35/00*
U.S. Cl. 74—801 **5 Claims**

1. A hub gear of the planet gear type, for torque transmission between a drive shaft and a vehicle wheel, preferably for a truck, said hub gear comprising a sunwheel non-rotatably connected to the end portion of the drive shaft, a plurality of planet wheels rotatably mounted on a planet wheel holder, said planet wheel holder being non-rotatably connected to the vehicle wheel and having at least an end portion located axially inward of the sunwheel, and a gear ring non-rotatably connected to a non-rotating gear ring retainer that is located axially inward of the planet wheel holder, said sunwheel and said gear ring both meshing with said planet wheels, said gear ring being axially locked relative to said retainer by means of at least one locking means radially attached between the gear

ring and the gear ring retainer, the locking means engaging a groove on the gear ring and engaging another groove on the gear ring retainer, said locking means having at least one free portion which, when acted upon in a radial direction, releases



the gear ring from the gear ring retainer, said planet wheel holder having at least one axial through-passage that, when the planet wheel holder has a certain rotational position relative to the gear ring, allows access to the free portion of the locking means by a tool.

4,270,413

INTERMITTENT OPERATION ARRANGEMENT IN A NOTCHING MACHINE

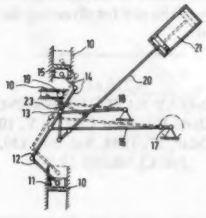
Hans-Martin Dommer, Göppingen, and Otto Kurz, Hattenhofen, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Göppingen, Fed. Rep. of Germany

Filed Feb. 2, 1979, Ser. No. 8,847

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804390

Int. Cl.³ F16H *21/26*

U.S. Cl. 74—828 **7 Claims**



1. An arrangement for enabling an intermittent operation of a notching machine so as to provide for an operating cycle consisting of alternatingly successive notching and notch-free operational steps, the notching machine comprising a first toggle joint means having a first end articulated to a ram and having a second end connected to a central pivot means, a second toggle joint means having a first end articulated to a counterbalance mass means and having a second end nonrotatably secured to the second end of said first toggle joint means at said central pivot means, eccentric drive means operatively connected to one of said first and second toggle joint means for driving said ram, a crank means having one end mounted on a frame of the notching machine and another end operatively connected to a cylinder-piston means, said crank means having an intermediate portion thereof pivotally connected to said toggle joint means at said central pivot means such that selective positioning of said crank means by the cylinder-piston means causes adjustment of the stroke of said ram; the crank means, cylinder-piston means and toggle joint means being arranged such that the central pivot means lies along a straight line connecting the first ends of said toggle joint means for all possible positions of said crank means.

4,270,414

IGNITION CONTROL FOR BETTER GEAR SHIFTING IN AN AUTOMOTIVE VEHICLE

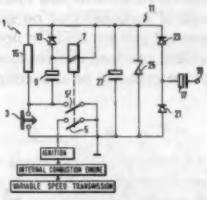
Rudy Tellert, Schweinfurt, Fed. Rep. of Germany, assignor to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,682

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742809

Int. Cl.³ F02B *77/00*; B60K *41/08*; F02D *11/02*

U.S. Cl. 74—852 **12 Claims**



1. Device to facilitate a fast change of gears in motorcycles, comprising:

(a) an internal-combustion engine externally ignitable by means of an ignition system;

(b) a variable speed transmission coupled to the internal-combustion engine, a shifting device having a shifting lever and a shifting shaft, the transmission having gears that are changeable by the shifting lever of the gear shifting device, said lever being actuable by a driver of the motorcycle;

(c) two gear shifting members having a common rotational axis and being rotatable relative to each other around the common rotational axis, said members forming a line of force transfer from the shifting lever of the transmission, a pair of limit stops, at least one of said gear shifting members having the rotational angle of relative movement limited relative to the other by said stops, a shifting shaft, one of the gear shifting members being located closer to the transmission than the other and being non-rotatably mounted on the shifting shaft of the gear shifting device transverse to the axis of rotation of the shaft;

(d) a contactor on one of the members actuable during relative rotation of the gear shifting members; and

(e) a timing circuit actuable by activation of the contactor and which turns off when the ignition system is tripped and, after the termination of a delay of a predetermined duration, again turns on.

4,270,415

TRACTION-DRIVE TRANSMISSION WITH HYDRAULIC CONTROL

Thorn W. Dickinson, Berlin; Daniel R. McLarty, and Thomas F. Lyons, Jr., both of Plantsville, all of Conn., assignors to Textron Inc., Providence, R.I.

Filed Mar. 12, 1979, Ser. No. 19,558

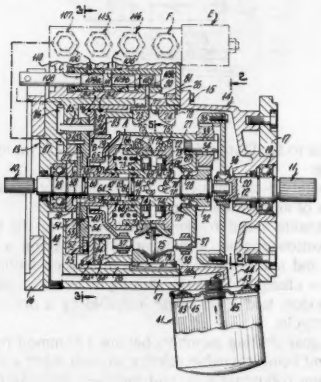
Int. Cl.³ B60K *41/14*

U.S. Cl. 74—867 **43 Claims**

1. A transmission comprising a housing, a drive shaft and a driven shaft journaled for rotation in said housing on a com-

mon axis, a variable-ratio coupling mechanism coupling said shafts, pressure-fluid operated control means for vaying the instantaneous coupling ratio of said mechanism, said mechanism having yieldable antirotational support in said housing, said control means including means operative in the presence of rotational displacement of said mechanism with respect to said housing in response to a change in torsional load on said mechanism, said control means being operatively connected to effectively increase the torque capacity of said coupling mechanism in response to increasing torsional load for a given ratio of said coupling mechanism.

42. A transmission comprising a housing, a drive shaft and a driven shaft journaled for rotation in said housing on a common axis, a variable-ratio coupling mechanism coupling said shafts, pressure-fluid operated control means for varying the instantaneous coupling ratio of said mechanism, said mechanism having yieldable torque-sensitive antirotational support in said housing, said torque-sensitive support including a pressure-fluid control element which is responsive to a change of yielding incremental rotation of said mechanism in the presence of a change of torsional load on said mechanism, said pressure-fluid control element being so operatively connected to said pressure-fluid operated control means as to effectively increase the torque capacity of said coupling mechanism in



response to increasing torsional load for a given ratio of said coupling mechanism.

43. A traction-drive transmission, comprising a housing, a drive shaft journaled for rotation in said housing, a rolling-element planetary system including sun-wheel means keyed to said shaft, a gear-element planetary system including sun-gear means keyed to said shaft, planet wheels and planet gears respectively associated with said systems and a planet-member carrier in common for guidance of said planet wheels and planet gears in rotary orbit about the shaft axis, said rolling-element planetary system further including reaction-ring means having yieldable antirotational support in said housing, and said gear-element planetary system having ring-gear means with a transmission-output connection; and pressure-fluid operated control means operative to axially load the engagement of said sun-wheel means and of said reaction-ring means upon said planet wheels to thereby determine the drive ratio of coupling to said drive shaft to said output connection, said control means including means operative in the presence of rotational displacement of said reaction-ring means with respect to said housing in response to a change in torsional load on said transmission, said control means being operatively connected to increase the torque capacity of said transmission in response to increasing torsional load for a given ratio of said transmission.

4,270,416

SCALPEL BLADE EXTRACTOR

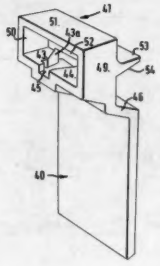
David K. Thompson, London, England, assignor to Jermed Limited, St. Helier, Channel Islands

Filed Apr. 20, 1979, Ser. No. 31,807

Claims priority, application United Kingdom, Apr. 21, 1978, 15886/78

Int. Cl.[3] **B25B** *27/14;* **B65F** *7/00*

U.S. Cl. 81—3 R **5 Claims**



1. A device for removing a detachable blade from a scalpel or the like in which a slotted blade is received in opposed lateral grooves in a thin elongate tang with a proximal region of the blade located behind the tang in a cut-away laterally convergent region intermediate the tang and the handle, the device including a base wall over whose surface the scalpel is advanced and having laterally opposed protuberant regions over which the blade slides and a slot between the protuberant regions which can receive the tang but not the blade, a fully inserted position of the scalpel being defined by abutment between the proximal edges of the protuberant regions and said convergent region, a rear wall supported behind the slot with its lower edge spaced from the base wall to allow the scalpel and blade to be inserted therebetween and to allow a fully inserted scalpel to be pivoted about the lower edge to a tilted orientation in which the proximal end of the blade is levered away from the intermediate region clear of the tang and is retained by interference with the rear wall during removal of the scalpel handle in the titled orientation, and guide surfaces proximally of the slot for directing the scalpel blade or handle into the slot.

4,270,417

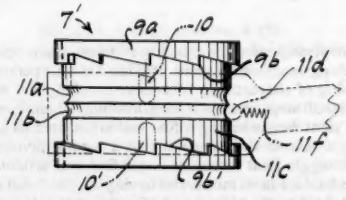
TWO-WAY RATCHET WRENCH

Joseph Tesoro, 9 Dade Rd., New City, N.Y. 10956

Filed Mar. 17, 1980, Ser. No. 130,834

Int. Cl.[3] **B25B** *13/46*

U.S. Cl. 81—62 **8 Claims**



1. A two-way ratchet wrench comprising in combination: a socket element having a substantially cylindrical outer circumscribing surface and shaped in the nature of a cylinder having circumscribing overhanging lips at each of opposite ends of the cylinder overhanging radially outwardly, and each of the overhanging lips having a ratchet toothed surface circumscrib-

ing said cylinder with the ratchet toothed surface at one of said overhanging lips being shaped to engage a key when the socket element is attempted to be moved in a first revolving direction and with the ratchet toothed surface at a remaining other one of said overhanging lips being shaped to engage a key when the socket element is attempted to be moved in an opposite second revolving direction opposite to said first revolving direction, and said cylinder having an outer circumscribing intermediate wall located between said circumscribing overhanging lips, and said outer circumscribing wall including an alternate position means for adjusting said cylinder axially along a longitudinal axis of the cylinder; and socket mounting means for mounting said socket element revolvably therein, including a mounting housing having a through passage of substantially circular cross-section at an inner-wall surface of the mounting housing, of a size and shape to revolvably mount and support said socket element at said outer circumscribing intermediate wall at positions between said circumscribing overhanging lips, said inner-wall surface including a portion of said alternate position means such that said socket element can be shifted between alternate first and second positions by to and fro alternate movement of said cylinder axially along said longitudinal axis, and said inner-wall surface further having mounted thereon a key means providing a first key engageable and lockable of the ratchet toothed surface of said one of said overhanging lips when said socket element is positioned in said first position and providing a second key engageable and lockable of the ratchet toothed surface of said remaining other one of said overhanging lips when said socket element is positioned in said second position, such that in said first position said socket element is locked against movement in one of clockwise and counter-clockwise directions and such that in said second position said socket element is locked against movement in a remaining other one of said clockwise and counter-clockwise directions.

4,270,418

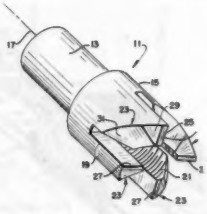
FLUTED TOOL

Donald L. Shephard, Port Huron, Mich., assignor to Helen I. Shephard, Port Huron, Mich., a part interest

Filed Dec. 12, 1979, Ser. No. 102,927

Int. Cl.³ B25B *13/02*

U.S. Cl. 81—90 D **17 Claims**



1. A tool for removing bungs and screws comprising a cylindrical shank of predetermined diameter having a longitudinal central axis, adapted for connection adjacent one end to a rotatable power drive;

a cylindrical head of increased diameter extending axially of its other end;

there being transverse axial longitudinal slots through said head extending inwardly from its end for a substantial portion of its length;

and an axial interiorally threaded bore for the length of said slots defining a plurality of flexible parallel flutes;

each flute having a first flat axial side extending substantially the length of said slots;

a radial top edge at the end of said flat side inclined outwardly and toward said shank at an acute angle;

said radial edge terminating in a flat relief surface extending at an increased acute angle toward said shank;

said relief surface terminating in a flat clearance surface extending in a further increased acute angle toward said shank;

said clearance surface terminating in a second axial flat side.

4,270,419

MULTI-SPINDLE LATHES

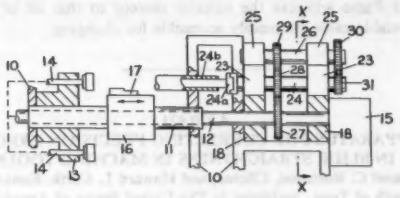
Geoffrey E. S. Tomlinson, Solihull, England, assignor to White-BSA Tools Ltd., Birmingham, England

Filed May 22, 1979, Ser. No. 41,485

Claims priority, application United Kingdom, May 24, 1978, 53-22139

Int. Cl.³ B23B *3/34, 21/00*

U.S. Cl. 82—3 **12 Claims**



1. A multi-spindle machine tool comprising a frame, a main drive shaft rotatably mounted on said frame, workpiece holding means mounted on said frame and including a plurality of rotatable work spindles, a tool slide mounted on said frame for movement towards and away from said workpiece holding means and adapted to have at least one tool mounted thereon, a main mounting block fixed to said frame, a plurality of mounting surfaces on said main mounting block parallel to and disposed around said main drive shaft, at least one auxiliary mounting block each of which is removably secured to a respective one of said mounting surfaces, at least one auxiliary drive shaft rotatably supported by said at least one auxiliary mounting block for detachable drive-transmitting engagement with said at least one tool, and transmission means for transmitting drive from said main drive shaft to each said auxiliary drive shaft, said transmission means including a first part coupled to said main drive shaft and a second part coupled to each said auxiliary drive shaft, said first and second parts being detachably engaged, whereby each said auxiliary mounting block and the respective auxiliary drive shaft and second part of said transmission means can be removed as a unit from said main mounting block.

4,270,420

MULTI-SPINDLE LATHES

Geoffrey E. S. Tomlinson, Solihull, England, assignor to White-BSA Tools Ltd., Birmingham, England

Filed May 22, 1979, Ser. No. 41,541

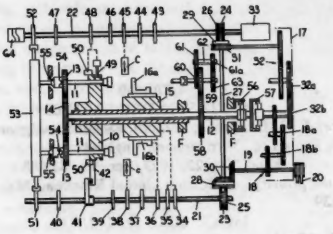
Claims priority, application United Kingdom, May 24, 1978, 22134/78

Int. Cl.³ B23B *3/34, 19/02*

U.S. Cl. 82—3 **12 Claims**

1. A multi-spindle machine tool comprising a frame, a main drive shaft rotatably mounted on said frame, a spindle carrier mounted on said frame for indexing movement relative thereto, a plurality of work spindles rotatably carried by said spindle carrier and driven from said main drive shaft, a tool slide mounted on said frame for movement towards and away from said spindle carrier, and a plurality of rotatable cams driven from said main drive shaft and operatively coupled to

said tool slide and said spindle carrier, all of said rotatable cams being mounted on at least one camshaft disposed along a side of



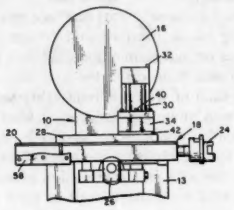
said frame adjacent the exterior thereof so that all of said rotatable cams are readily accessible for changing.

4,270,421

APPARATUS FOR CORRECTING PRECISION ERRORS IN SLIDE STRAIGHTNESS IN MACHINE TOOLS

Samuel C. Robinson, Clinton, and Howard L. Gerth, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 22, 1979, Ser. No. 22,898
Int. Cl.[3] B23B *21/00*
U.S. Cl. 82—21 A 4 Claims



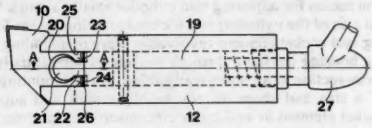
1. An improvement in a machining apparatus utilized to machine a workpiece into a desired product configuration wherein deviations in slideway straightness and roll are compensated for, comprising spindle means rotatable about an axis and adapted to support one of a workpiece and a machine tool, elongated slide means, carriage means on said slide means for displacement therealong, fixture means carried by said carriage means and adapted to support one of a workpiece and a machine tool, moving means coupled to said carriage means for effecting the displacement of the carriage means and the fixture means on said slide means along a preselected path, said improvement comprising fixture supporting means comprising a mass of metal disposed intermediate to and coupled to both said fixture means and said carriage means, hinge means in said fixture supporting means contiguous to the coupling with said carriage means for providing movement of said fixture supporting means and the fixture means coupled thereto in a plane normal to said preselected path, said hinge means comprising a pair of parallel elongated and co-extensive slots extending through the thickness of the fixture supporting means and spaced from one another by a portion of said fixture supporting means, said fixture supporting means being coupled to said carriage means at said portion, and drive means coupled to said carriage means and contacting said fixture supporting means for displacing the latter along said plane a preselected distance by bending said portion adjacent to the distal ends of said slots.

4,270,422

CUTTING TOOL

Ken G. E. Andersson, Årsunda, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Sep. 19, 1979, Ser. No. 76,860
Claims priority, application Sweden, Sep. 26, 1978, 7810060
Int. Cl.[3] B23B *29/12*
U.S. Cl. 82—36 R 10 Claims



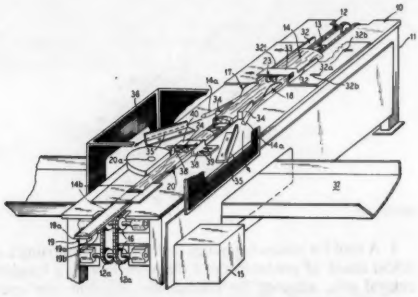
1. A cutting tool comprising an elongated holder body, and a bar movable in the holder body for clamping a tool element against the holder body, said tool element being provided with a cutting means, characterized in that the tool element is provided with a groove, the opening of said groove facing the bar, said tool element having projections at said opening into said groove from both sides thereof so as to provide the opening with a restricted cross section area, and that the bar is provided with an enlarged portion adjacent to the tool element, said groove being adapted to receive said enlarged portion, said enlarged portion and projections having complementary cam surfaces so that when pulling by means of the bar the tool element against at least one end surface on the holder body the projections are caused to expand in opposite directions, thereby forcing the projections against opposed abutting surfaces on the holder body.

4,270,423

SLAB TRIMMING APPARATUS

Frank M. Angelo, Box 847, Jonesboro, Ark. 72401

Filed May 29, 1979, Ser. No. 43,379
Int. Cl.[3] B27B *7/02, 1/00*
U.S. Cl. 83—102.1 2 Claims



1. A slab trimming apparatus adapted to square up slabs cut from outer sections of logs, each slab has a curved surface bounded by a straight surface, said apparatus comprising:

an elongated supporting frame with a flat top surface and a conveyor adapted to move a plurality of slabs, with straight surfaces positioned adjacent said conveyor, along said elongated dimension of said frame, the members of the plurality of slabs are spaced apart from one another by spaced apart, wedge shaped, pushing members affixed to said conveyor, each said pushing member pushes an associated slab through said elongated dimension of said frame,

first and second powered rotary saws selectively positioned near a first end of said frame, said saws rotate in planes

perpendicular to said flat top surface and are spaced apart laterally from one another on a common axis of rotation with said conveyor therebetween, said lateral spacing determines a width dimension of the squared up slabs which are pushed by said conveyor through said saws,

first and second elongated wedge shaped trim deflecting members affixed to said flat top surface adjacent output sides of said first and second saws with said conveyor passing therebetween, said first and second wedge shaped members are adapted to laterally deflect pieces trimmed from each slab by said first and second saws,

first and second elongated right-angle members affixed to said flat top surface a selected distance away from said first and second trim directing members and oriented laterally outwardly with respect thereto, said first and second right angle members are adapted to further deflect laterally and off of said frame the pieces trimmed from each side of each slab,

a third circular, rotary, powered saw positioned near a second end of said frame with an axis of rotation perpendicular to said flat top surface, said third saw is spaced vertically above said top surface, over a section of said conveyor, a selected distance corresponding to a desired height dimension of the squared up slabs, said pushers push each slab past said third saw thereby trimming a top portion from each slab producing a board with a rectangular cross section,

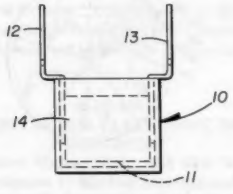
an elongated planar deflection member located on an output side of said third saw and adapted to deflect the trimmed top portion from each squared up slab.

4,270,424

METHOD AND APPARATUS FOR CUTTING AND RACKING LEAD FRAME STRIPS OF BOXED CAPACITORS

Donald K. Sandmore, Oak Lawn, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,372
Int. Cl.[3] B23D *33/02*; B26D *7/18*
U.S. Cl. 83—167 **8 Claims**



1. An apparatus for advancing sections of a carrier strip having spaced feed holes into chambers of a multi-chamber magazine, which comprises:

T-shaped dividers defining the chambers and having top sections spaced apart to provide feed slots;

means for cyclically advancing sections of the carrier strip into a chamber of the magazine;

means rendered effective upon advance of a predetermined length of the strip into a chamber for severing the strip;

auxiliary means including a feed pin rendered effective upon completion of operation of the severing means for engaging the feed pin within a carrier strip feed hole and advancing the pin through and along a feed slot to move the severed section of strip completely within the chamber of the magazine; and

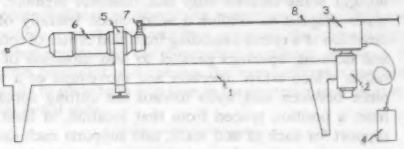
means rendered effective upon completion of operation of the auxiliary advancing means for moving the magazine to present another chamber in position to receive a subsequently advanced section of the carrier strip.

4,270,425

CIRCLE CUTTING ATTACHMENT

Luther D. Albertson, Jr., 3310 Ridgewood Dr., New Albany, Ind. 47150

Filed Dec. 13, 1978, Ser. No. 969,216
Int. Cl.[2] B23D *27/00*
U.S. Cl. 83—411 R **1 Claim**



1. A circle cutting apparatus utilized as an attachment to hand type power metalworking shears and nibblers for the purpose of cutting precision circles comprising;

a. A ridged support frame upon which is mounted a yoke and clamp assembly for holding and positioning a shear or nibbler along said support frame;

b. A shaft and bearing assembly rigidly connected to one end of said support frame;

c. A electro-magnet attached to one end of shaft of said shaft and bearing assembly for holding a workpiece magnetically in position while being rotated 360 deg. by hand;

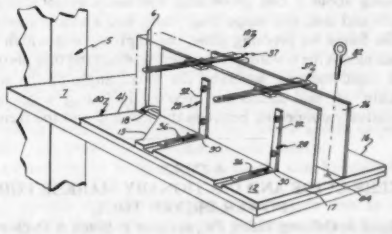
d. A AC to DC current rectifier electrically connected to said electromagnet with on-off switch for control.

4,270,426

ROTATABLE CUTTING GUIDE

Rouchdy B. Raphael, 508 Lyon St., NE., Grand Rapids, Mich. 49503

Filed Feb. 22, 1979, Ser. No. 14,260
Int. Cl.[3] B27B *13/04*; B26D *7/06, 3/10*
U.S. Cl. 83—411 R **25 Claims**



1. A cutting guide for supporting and guiding a work piece such as flexible foam material or the like during cutting of an arc or curved path in the work piece comprising:

a base;

a rotatable member rotatably mounted on said base for rotation about a center;

rigid, upstanding, support means on said rotatable member for supporting a work piece to be cut in an arc or curved path; and

pivot means on said base and rotatable member for providing and fixing a center of rotation of said rotatable member with respect to said base, said rotatable member being rotatable about said pivot means to guide the cutting of a precise circular arc or curve in a work piece when said cutting blade is located adjacent a cutting apparatus such as a band or other type saw and a work piece is supported by said support means;

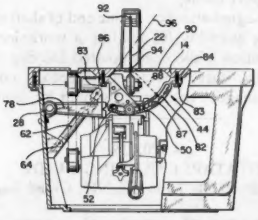
said upstanding support means including a pair of spaced, upright walls secured atop said rotatable member, said walls adapted to confine a work piece laterally of the direction of a radius extending from said center of rotation and defining openings parallel to said direction of said radius which allow insertion and movement of a work piece between said walls toward the cutting apparatus from a position spaced from that location, at least one support for each of said walls, said supports each including securing means for securing said supports at various positions on said rotatable member whereby the spacing between said walls is adjustable laterally of said radial direction to support different sized work pieces and to support work pieces at different positions with respect to said center of rotation.

4,270,427

BEVEL ANGLE SETTING MEANS FOR A POWER TOOL APPARATUS

Richard A. Colberg, Lititz, and William T. Henry, Jr., Lancaster, both of Pa., assignors to Black & Decker Inc., Newark, Del.

Filed Feb. 4, 1980, Ser. No. 118,571
Int. Cl.³ B27B *5/24*
U.S. Cl. 83—473 **8 Claims**



2. In a power tool apparatus including a housing equipped with a table top having an opening through which a motor-driven saw can pass, an assembly pivotally mounted in the housing about a first pivot axis, the assembly including the motor and saw, and supporting frame, and a handle connected to the frame for pivoting same, the improvement which comprises means for pivoting the assembly about the first pivot axis in a rapid manner, whereby the bevel angle of the tool is quickly set, said means for pivoting including a gas spring operatively connected between the housing and the frame.

4,270,428

KERF GUIDE AND CAUTIONARY MARKER FOR A POWER DRIVEN TOOL

Richard A. Colberg, Lititz, Pa., assignor to Black & Decker Inc., Newark, Del.

Filed Jul. 25, 1979, Ser. No. 60,380
Int. Cl.³ B27B *5/22*
U.S. Cl. 83—477.2 **8 Claims**

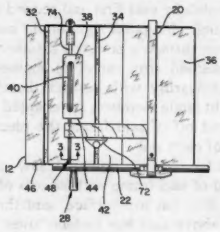
1. A power tool apparatus having a housing, drive means mounted in the housing, and a tool connected to the drive means, comprising:

(a) a table top having a front edge mounted on the housing, and having a first surface lying in a plane,

(b) a linear groove formed in the first surface,

(c) a tool opening having an insert aperture through which the tool is extendable, formed in the first surface and intersecting the groove,

(d) cautionary material inserted in the groove and having a second surface lying in the plane of the first surface,



(e) the second surface capable of receiving a scribe mark and having a color contrasting with the color of the table top adjacent the groove, whereby a workpiece may be aligned with the tool along the second surface and an operator is alerted to the tool's cutting path,

(f) the linear groove extends to the front edge, and

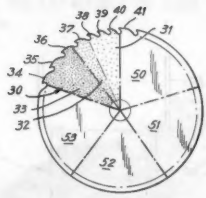
(g) the second surface extends the length of the groove.

4,270,429

ATTENUATED VIBRATION CIRCULAR SAW

Ernest W. Brown, Gresham, Oreg., assignor to International Paper Company, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,822
Int. Cl.³ B27B *33/08*
U.S. Cl. 83—851 **11 Claims**



1. A circular saw having improved vibration characteristics comprising:

a circular saw plate;

a multiplicity of saw teeth circumferentially disposed around said saw plate;

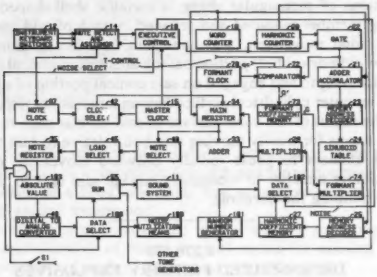
said saw teeth being positioned in a plurality of generally equal angular segments around said saw plate each segment including a plurality of said saw teeth the majority of which are randomly spaced from each other, each said segment including a first angular zone which is generally stiffer than the balance of said segment, and wherein the quantity of said segments around said saw plate is an odd number;

whereby as said saw is rotated said segments tend to induce a nodal vibration whose period corresponds to two of said segments and periodic reinforcement of said nodal vibration tends to be avoided by an out-of-phase relationship of the vibration excursion occurring at the beginning of one revolution of said saw with respect to the vibration excursion occurring at the end of said revolution.

4,270,430
NOISE GENERATOR FOR A POLYPHONIC TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Nov. 19, 1979, Ser. No. 95,896
Int. Cl.³ G10H *1/08, 5/00*
U.S. Cl. 84—1.23 **11 Claims**



1. A musical instrument utilizing a noise-like signal generator comprising;

a random number generator for creating a sequence of random data values,

a means for computing a noise master data set responsive to said sequence of random data values during each computation cycle of a sequence of computation cycles,

a first memory means for writing said noise master data set to be thereafter read out,

a second memory means for writing input data to be thereafter read out,

means for reading said noise master data set from first memory means and for writing said noise master data set in said second memory means,

means for repetitiously and sequentially reading out data stored in said second memory means,

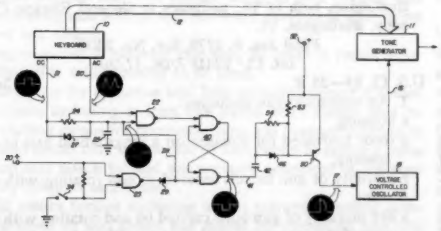
absolute value means for generating the absolute values of data read out from said second memory means, and

means for converting wherein said generated absolute values of data are converted to provide said noise-like signal.

4,270,431
GLIDE CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENT

James S. Southard, Union, Mich., and Eric R. Bean, South Bend, Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jan. 13, 1978, Ser. No. 869,321
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **11 Claims**



1. In a keyboard musical instrument including a keyboard, a tone generator and a controlled reference oscillator for supplying a reference frequency signal to the tone generator,

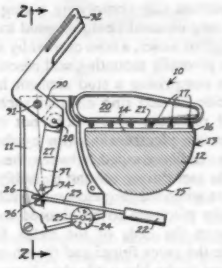
means for determining when a second key has been activated subsequent to the activation of a first key of the keyboard and during the time that the first key remains activated,

means connected to the determining means and to the controlled oscillator for detuning the tone generator, said detuning means producing a transient control signal in response to the determination of the determining means of the activation of a second key subsequent to the activation of a first key and during the time that the first key remains activated, the determining means being connected between the keyboard and the detuning means, the transient control signal automatically returning to its initial state within a predetermined time interval, the control signal when applied to the controlled oscillator detuning the tone generator and causing the tone generator automatically to glide back into tune as the control signal returns to its initial state.

4,270,432
CAPO

James W. Wilkerson, Highway 64 East, Savannah, Tenn. 38372

Filed Oct. 29, 1979, Ser. No. 89,158
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—318 **3 Claims**



1. A capo for attachment to the neck of a stringed musical instrument, said neck having a longitudinal axis, opposite sides, a top surface and a bottom surface, transverse frets disposed on said top surface and a plurality of strings disposed parallel to said longitudinal axis, comprising:

(a) a frame,

(b) an elongated top pressure bar projecting from said frame and adapted to extend transversely to said longitudinal axis over said top surface and to engage said strings when said frame is located along one side of said neck in operative position,

(c) a mounting arm having a remote end terminating in a bottom pressure bar, a proximal end, and an intermediate portion between said remote end and said proximal end,

(d) means supporting the intermediate portion of said mounting arm for pivotal movement about an axis parallel to said longitudinal axis for movement of said bottom pressure bar between an operative position engaging the bottom surface of the neck of a musical instrument and an inoperative position away from said bottom surface,

(e) a manual lever terminating in a toggle arm, having a free end,

(f) a journal member connecting said toggle arm to said frame above said mounting arm and between said free end and said manual lever, for pivotal movement about an axis parallel to said longitudinal axis,

(g) a link bar having upper and lower ends,

(h) a connector member connecting the lower end of said link bar to the proximal end of said mounting arm,

(i) a hinge pin member pivotally connecting the free end of said toggle arm to the upper end of said link bar, whereby

said hinge pin member is adapted to move past a dead-center line extending through said journal member and said connector member, when said manual lever moves to its operative position, causing said bottom pressure bar to move to its operative position and said top pressure bar to engage and force said strings against a fret.

4,270,433

FINGER RING WITH PLECTRUM

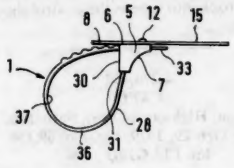
Robert Adamec, Georgenstrasse 49, 8450 Amberg, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 86,016

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911696; Aug. 14, 1979, 2932882

Int. Cl.³ G10D *3/16*

U.S. Cl. 84—322 **17 Claims**



1. A plectrum ring comprising a ring element and a plectrum, said ring element being adapted to be worn around the middle finger of a user, a boss carried by said ring element, and stud means pivotally mounting said plectrum on said boss, said stud means comprising a stud element having an axis which passes outside of said ring element such that the axis about which said plectrum pivots does not intersect said middle finger when the plectrum is worn by the user, whereby said plectrum is readily grasped between the index finger and the thumb of the user during use and is readily pivotable about said stud element while the ring element is still on the middle finger to permit the plectrum to be pivoted to a position removed from between the ends of the index finger and thumb to thereby free the index finger and thumb to pluck the strings of an instrument or the like while the plectrum is still retained on the middle finger.

4,270,434

STRADDLING DOWEL

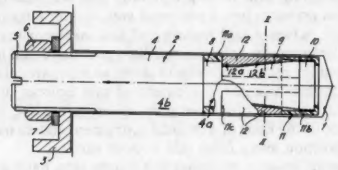
Josef Bucheli, Herrliberg, Switzerland, assignor to Tuflex AG, Switzerland

Filed Nov. 17, 1978, Ser. No. 961,649

Claims priority, application Switzerland, Dec. 20, 1977, 15713/77

Int. Cl.³ F16B *13/10*

U.S. Cl. 411—21 **5 Claims**



1. A dowel construction for anchoring an element in a borehole of a wall comprising a metallic bolt adapted to be received in the borehole, said bolt having a cylindrical shank portion of uniform diameter corresponding to the diameter of the borehole, a conical portion having an angle of conicity of from 3° to 10° and conically expanding toward an end of the bolt adapted to be received in the borehole, an inner cylindrical portion of a diamter smaller than the diameter of said shank portion and greater than the smallest diameter of the conical portion connecting said shank portion and said conical portion and a cylindrical end portion connected to said conical portion, a tubular cage element mounted on said bolt about said conical portion and having a rear annular portion arranged on said inner cylindrical portion and abutting said shank portion and a front annular portion overlapping and abutting the front face of cylindrical end portion of said bolt, said tubular cage element being plastic and having a plurality of circumferentially spaced apertures between said rear and front annular portions of rectangular shape, a metallic shell-shaped straddling member mounted and retained in each of said apertures for radial movement, said straddling member abutting said inner cylindrical bolt portion having an interior conical surface conforming to and engaged on said conical portion of said bolt and an outer cylindrical surface having a radius corresponding to the radius of the outer surface of said tubular cage member, and means for axially moving said bolt relative to said tubular cage element to cause radially outward movement of said straddling member to wedgingly engage said bolt to the surface defining the borehole.

4,270,435

DESENSITIZED PRIMARY EXPLOSIVES

Gerald L. Hurst, Austin, Tex., assignor to Atlas Powder Company, Dallas, Tex.

Filed May 16, 1979, Ser. No. 39,351

Int. Cl.³ C06B *37/00*; F42B *3/10*

U.S. Cl. 86—1 R **20 Claims**

1. A method of desensitizing and resensitizing explosive metal fulminate primary explosives comprising:

(a) contacting the explosive metal fulminate with an effective amount of desensitizing agent selected from the group consisting of aliphatic amines, aromatic amines and ammonia to desensitize the explosive metal fulminate; and

(b) subsequently contacting the explosive metal fulminate with a Lewis acid in an amount effective to thereby recapture the impact sensitivity of the explosive metal fulminate.

5. A method for packaging silver fulminate containing explosive articles wherein the danger of shock detonation of a bulk quantity of said silver fulminate is substantially eliminated, comprising:

(a) desensitizing a bulk quantity of silver fulminate by contacting said silver fulminate with an effective amount of a desensitizing agent selected from the group consisting of aliphatic amines, aromatic amines and ammonia;

(b) depositing said desensitized silver fulminate on a substrate material;

(c) packaging discrete portions of said substrate deposited bulk quantities of desensitized silver fulminate;

(d) resensitizing said packaged discrete portions of silver fulminate by contacting said silver fulminate with an effective amount of a resensitizing agent.

4,270,436

AMMUNITION FEED AND EJECT MECHANISM

James C. Bishop, South Burlington, and Raymond A. Patenaude, Burlington, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Jan. 8, 1979, Ser. No. 2,039

Int. Cl.³ F41D *7/04, 11/30*

U.S. Cl. 89—33 R **5 Claims**

1. An automatic gun including:

a housing;

a rotor journaled for rotation on a longitudinal axis in said housing;

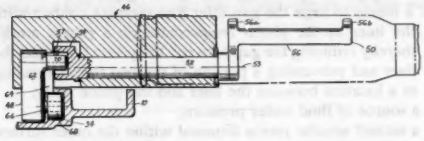
a plurality of gun barrels secured to and rotating with said rotor;

a like plurality of gun bolts carried by and rotating with said rotor for cooperation with said plurality of gun barrels;

first means for serially providing rounds of ammunition to said gun bolts;

second means for serially receiving fired cases from said gun bolts;

a like plurality of round control means each carried by and rotating with said rotor, and each journaled for movement with respect to said rotor about a respective axis which is parallel to said longitudinal axis of said rotor, each for cooperating with a respective gun bolt, for progressively



guiding the transfer of a round of ammunition from said first means to a respective gun bolt and for performing the transfer of a fired case from said respective gun bolt to said second means; and

additional control means fixed to said housing and coupled to said plurality of round control means for causing the movement of each of said round control means.

4,270,437

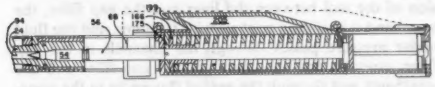
GAS OPERATED AUTOMATIC WEAPON

John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Continuation-in-part of Ser. No. 916,961, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 874,114, Feb. 1, 1978, Pat. No. 4,210,060, which is a continuation-in-part of Ser. No. 829,716, Sep. 1, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,679

Int. Cl.³ F41D *5/04*

U.S. Cl. 89—192 **10 Claims**



1. A gas operated automatic weapon comprising:

a receiver frame;

a barrel having a bore and chamber formed therein and secured to said receiver frame;

a bolt assembly slidably mounted within said receiver;

a feed mechanism feeding cartridges into said receiver frame through a breech opening formed in said receiver frame and ejecting spent cartridge casings from said receiver frame;

actuating means for causing said bolt assembly to move rearwardly to allow said ammunition to be fed into said receiver frame into a position aligned with said bolt assembly and further causing said bolt assembly to move so as to ram said round to ammunition into said chamber;

means locking said bolt in said position with said round seated in said firing chamber;

means locking said bolt during firing of said firearm and releasing said bolt for said rearward movement after firing of said round;

trigger means selectively operable to cause a round positioned in said chamber to be fired;

said means for actuating said bolt including power cylinder means including at least one piston and cylinder and including means for communicating gas pressure existing in said barrel bore to one side of said piston to create a force on said piston by said gas pressure generated in the bore by firing of said round;

said means further including a bolt extraction spring compressed by said piston and means for retracting said bolt by said compressed bolt extraction spring after firing of said cartridge and unlocking of said bolt assembly;

said feed mechanism including a feed slider moved rearwardly by said bolt assembly and returned by said means causing said bolt assembly to ram rounds of ammunition into said chamber, said feed slider including portions located to the front and the rear of said bolt extraction spring and portions extending therebetween, and further including means feeding said cartridges into said receiver frame by successive movements of said feed slider.

4,270,438

SERVO BOOSTERS FOR VEHICLE BRAKING SYSTEMS

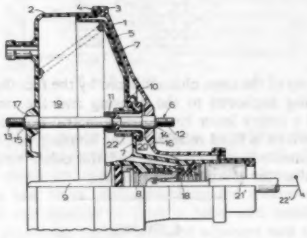
Alfred W. Thomas, Koblenz, and Lutz E. A. Op den Camp, Koblenz-Moselweiss, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 6, 1979, Ser. No. 55,483

Claims priority, application United Kingdom, Jul. 8, 1978, 29253/78

Int. Cl.³ F15B *13/02*

U.S. Cl. 91—49 **11 Claims**



1. A servo booster for a vehicle braking system comprising a housing, a pedal-operated input member and an output member, a movable wall dividing the interior of said housing into two chambers, a valve assembly controlling the differential pressure between said chambers in response to movement of said input member, a main diaphragm and a diaphragm support plate of said movable wall, first and second housing walls disposed on opposite sides of said movable wall, a stationary tie extending through said support plate from said first to said second housing wall, a tubular extension co-axial with said tie, means rigidly connecting said tubular extension to said support plate, and a rolling diaphragm, a first end of said rolling diaphragm being sealed to said tubular extension, and a second end of said rolling diaphragm being sealed to said tie.

4,270,439

FLUID ROTARY MACHINE

Jean-Luc Ponchaux, La Cure de Pétosse, 87550 L'Hermenault (Vendée), France

Filed Jun. 21, 1978, Ser. No. 917,569

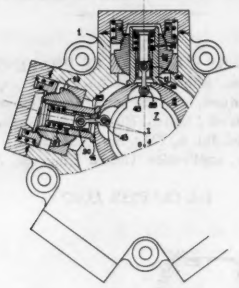
Claims priority, application France, Jun. 24, 1977, 77 19378; Canada, Jun. 27, 1977, 281419

Int. Cl.³ F01B *1/04*

U.S. Cl. 91—495 **2 Claims**

1. A fluid rotary machine having radial pistons and a shaft with an eccentric cam having a rotational movement relative to the housing, the cam mounting a ring on the exterior thereof and the pistons abutting against the exterior surface of the ring with each piston mounted for sliding movement in the interior of a cylinder, the ring being associated with the distribution of the fluid of the machine to the pistons and cylinders, means immobilizing the ring against rotation relative to the housing and subjugating the ring to an essentially circular translation movement relative to the rotational movement of the eccentric cam on which the ring is mounted, characterized by the fact that the means for maintaining the ring in such a position comprises a plurality of elastic members connecting predetermined points of the ring to anchor points unassociated with the ring, these elastic members being sufficiently strong to oppose

the tendency of the ring to rotate with the cam, but on the other hand, having sufficient elasticity to be adaptable to different eccentricities of the cam when the actual displacement of the machine is being changed, said elastic members being such that their flexion is only a fraction of the value of the



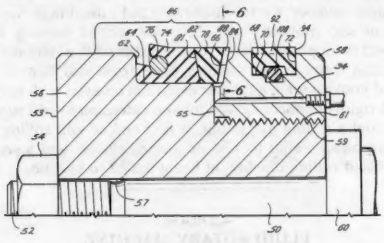
eccentricity of the cam, characterized by the fact that, between each spring anchored to the housing and the ring, there is provided a rotary lever having asymmetric arms and the fulcrum of which is fixed relative to the housing, one of the arms being connected to the spring and the other being slidably connected to the pivot axis of the ring.

4,270,440

HIGH PRESSURE PISTON AND SEAL

Edwin C. Lewis, II, Houston, Tex., assignor to Weatherford/DMC, Houston, Tex.

Filed Feb. 22, 1979, Ser. No. 14,016
Int. Cl.³ F01B *31/00*
U.S. Cl. 92—87 **13 Claims**



1. In a reciprocating mud pump having a cylinder liner and a piston rod, a piston slidably received within the liner comprising

a. a main body having a substantially cylindrical outer surface and a substantially cylindrical threaded surface of a smaller radius than the outer surface,

b. a rear support having a substantially cylindrical outer surface extending radially outwardly approximately equally to the outer surface of the main body around an axis and having a threaded inner surface compatible with the threaded surface of the main body so that said rear support is threadedly received by the main body to form a piston body around an axis said piston body having an outer surface of less diameter than that of the liner,

c. a means to secure the piston body to the piston rod,

d. a first annular recess disposed within the outer cylindrical surface of the piston body, said recess extending longitudinally from a front surface to a rear surface,

e. an elastomeric seal disposed substantially within a portion of the first annular recess and extending radially outwardly of the piston body, said seal having a diverging rear surface and at least a portion of said seal abutting at least a portion of the front surface of the first annular recess,

f. a means to urge the seal into sealing contact with the liner,

g. a gap filler having a diverging front face abutting the diverging rear surface of the seal, and a diverging rear face which carries a plurality of water channels communicating generally radially through the gap filler,

h. a means to urge the gap filler into intimate contact with the liner as the piston reciprocates on a power stroke thereby reducing the gap between the piston body and the liner and preventing a portion of the seal from extruding to a location between the liner and the piston body,

i. a source of fluid under pressure,

j. a second annular recess disposed within the outer surface of the rear support of the piston body, said second annular recess spaced apart from the first annular recess by a portion of the piston body,

k. an annular wearband substantially displacing the second annular recess, the peripheral surface of said wearband extending radially outwardly equidistantly with the gap filler into sliding contact with the liner, said wearband including a plurality of flowpaths traversing the wearband at an angle from the piston axis and,

l. a means to bias the wearband radially outwardly.

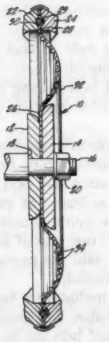
m. a means to communicate the source of fluid under pressure (i) through the piston and thence through the channels in the gap filler onto a portion of the liner which is disposed substantially between the gap filler and the wearband, and thence through the flowpaths in the wearband so that on the power stroke the seal is in sliding contact with the liner, the axial forces of the mud upon the seal urges the seal against the gap filler, the diverging front and rear faces of the gap filler permit the gap filler to be urged into sliding contact with the liner to eliminate extrusion of the seal between the liner and the gap filler, the wearband is in sliding contact with the liner, and the fluid under pressure passes through the channels in the gap filler, contacts the liner between the gap filler and the wearband, and through the angled flowpaths in the wearband thereby inducing a vortex washing action on a portion of the liner disposed rearward of the wearband.

4,270,441

PUMP DIAPHRAGM

Alan D. Tuck, Jr., Upland, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Continuation-in-part of Ser. No. 956,189, Oct. 30, 1978. This application Mar. 1, 1979, Ser. No. 16,426
Int. Cl.³ F01B *19/00*
U.S. Cl. 92—102 **4 Claims**



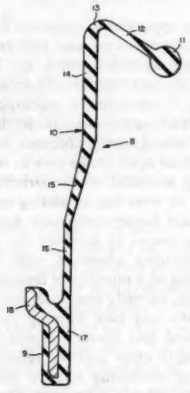
1. A pump assembly including an air chamber housing, a

liquid chamber housing and a diaphragm positioned therebetween, said air chamber housing having an air sealing means adjacent said diaphragm for sealing the joint between said air chamber housing and said diaphragm, said liquid chamber housing having an annular channel adjacent to said diaphragm and said diaphragm having a convex annular member to mate with said annular channel wherein the improvement comprises a continuous ridge on the convex annular member, said ridge being inwardly of the center line of said convex annular member.

4,270,442
DISC BRAKE BOOT

Dean R. Bainard, Bethel Township, York County, S.C., and Martin Benjamin, E. Gastonia, N.C., assignors to Garlock Inc., Longview, Tex.

Continuation of Ser. No. 875,765, Feb. 7, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 109,894
Int. Cl.³ F16J *15/18, 15/52*
U.S. Cl. 92—168 **15 Claims**

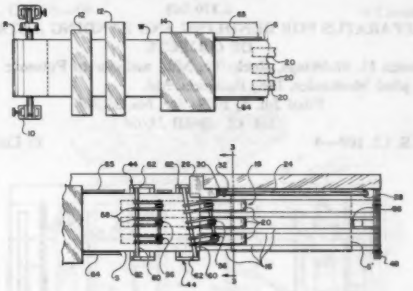


1. A flexible elongated sealing boot for sealing an annular space between a wall of a cylinder defining a bore and a relatively axially movable piston in the bore, said sealing boot comprising an annular, molded, one-piece, elastomeric sleeve that is collapsible from an extended as-molded condition to a collapsed, convoluted condition, said sleeve having a sealing bead portion at one end thereof and a cylinder sealing portion at the other end thereof, said bead portion having a smaller as-molded inner diameter than that of said cylinder sealing portion, said sleeve comprising seven distinct wall portions of a plurality of different thicknesses serially connected together and comprising in order from said bead portion: said sealing bead portion, an upper boot wall, an upper flex wall, a stabilizing wall, an outwardly tapered frusto-conical rolling wall, a lower flex and rolling wall, and said cylinder sealing portion, said sealing bead and said upper boot wall being located in the as-molded shape of said sleeve radially inwardly from said stabilizing wall and being connected thereto by said upper flex wall, and said lower flex and rolling wall and said cylinder sealing portion being located in the as-molded shape of said sleeve radially outwardly from said stabilizing wall and being joined thereto by said outwardly tapered frusto-conical rolling wall.

4,270,443
CONVOLUTE PAPER TUBE FORMING APPARATUS AND METHOD

Thomas L. McSwiney, Rock Hill, S.C.; George S. Bomar, La Fayette, and Oran W. Johnson, Calhoun, both of Ga., assignors to Star Paper Tube, Inc., Rock Hill, S.C.

Filed Jul. 11, 1978, Ser. No. 923,673
Int. Cl.³ B31C *3/00*
U.S. Cl. 493—287 **29 Claims**

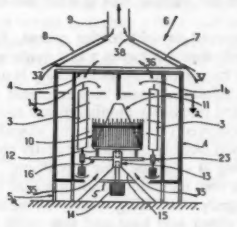


1. A convolute paper tube forming apparatus comprising elongated means for engagement of the full length of an edge of a sheet of paper and means for rotating said elongated means for winding said sheet onto said elongated means about the longitudinal axis thereof to form a tube, and continuously-advancing conveying means disposed adjacent said elongated means for causing said sheet to be moved generally parallel to the axis of said winding by relatively slidable frictional contact of said sheet with said conveying means for axial movement of said sheet edge longitudinally and progressively into said full length winding engagement.

4,270,444
SPIT ROASTER

Robert Geissmann, 153 Rue de l'Universite, 75007 Paris, France

Filed Sep. 6, 1978, Ser. No. 940,085
Int. Cl.³ A47J *37/04*
U.S. Cl. 99—421 V **9 Claims**



1. A spit roaster comprising a horizontally disposed table, mounted for rotation about a first axis, a body member mounted centrally on said table, and a grid mounted along the periphery of said table to define with said body member an area for location of a source of heat, a sleeve mounted for rotation about said central axis, conjointly with said table, a plurality of radially extending hollow arms projecting from said sleeve, a rod member slidably positioned in each of said arms and selectively securable in any desired extended relation radial therewith, a spit rotatably mounted on the free end of each of said rods for rotation about a second axis spaced from said first axis and rotatable conjointly with said table about said first axis, first motor means to rotate said table and spits about said first

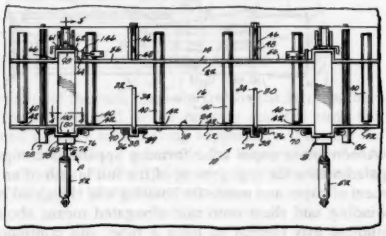
axis, and second motor means to rotate said spits about said second axis, a stirrup carried by each of said rods, a coupling sleeve secured to each said stirrup extending longitudinally thereof, and an electric motor mounted at one end of each said stirrup having a motor shaft thereof insertable into one end of the coupling sleeve, the other end of each said coupling sleeve being adapted to receive one of the mounting shafts of the spit for operative connection with the motor.

4,270,445

APPARATUS FOR BUNDLING AND BANDING A STACK OF OBJECTS

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Jul. 6, 1979, Ser. No. 55,368
Int. Cl.[3] B65B *13/04*
U.S. Cl. 100—4 **15 Claims**



1. An apparatus for bundling and banding objects together comprising:

a bundler structure including a base and first and second opposing side walls having opposing inside surfaces extending upward from the inside surface of said base, said side walls having upper edges defining an opening for vertically receiving said objects onto said base at a first position on said base, said base and side walls having means for releasably guiding at least one band downward along the inside surface of one of said walls, beneath said objects to be banded and upward along the inside surface of the other of said walls when said objects are in said first object position; and

bridge means for guiding said at least one band across said opening;

means, connected to said bridge means, for moving said bridge guide means between a first guide position whereat said guide means extends substantially across said opening in spaced relation to said base in planar alignment with said wall and releasably guiding means and a second guide position removed from at least one of said two side walls whereat said objects may be vertically received through said opening at said first object position;

said first side wall including banding means for banding said objects together including means for feeding said at least one band along said base and side walls and along said bridge guiding means to complete a planar path about said objects to be banded;

tightening means for releasing said at least one band from said releasable guide means and tightening said at least one band about said objects to be banded;

said side surface upper edges being parallel aligned and defining a longitudinal direction, and wherein the bundler structure is open-ended;

said walls and base being pivotable about an axis parallel to said longitudinal direction into a tilted position so that said objects to be banded may be jointly supported by said base and said second side wall;

said base further including first roller means for rolling said objects in said longitudinal direction thereon, out an open end; and

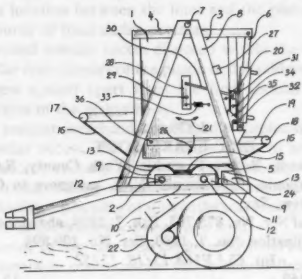
said second side wall further including second roller means for rolling said objects in said longitudinal direction thereon, out an open end.

4,270,446

BALE FORMING APPARATUS

Joseph Molitorisz, 624 81st Ave., NE., Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 923,829, Jul. 12, 1978, Pat. No. 4,175,487. This application Aug. 16, 1979, Ser. No. 67,187
Int. Cl.[3] B65B *13/20*; B30B *15/32*
U.S. Cl. 100—8 **5 Claims**



1. A bale forming apparatus to compress loose fibrous materials such as agricultural crops and industrial products into substantially rectangular bales which are held together by twine, wire or the like, said bale forming apparatus comprising; a structural frame, a substantially rectangular bale forming chamber, and a feeder-compactor mechanism, said substantially rectangular bale forming chamber having its bottom boundary surface as an open intake port to receive the fibrous material, and being mounted on the structural frame of the apparatus allowing its reversing oscillating motion in a vertical plane relative to said feeder-compactor mechanism, suitable power transmission means to oscillate the said substantially rectangular bale forming chamber, said feeder-compactor mechanism consisting of; a plurality of feeder-compactor roller assemblies to receive, partially compress and transfer the loose fibrous material into said bale forming chamber, said bale forming chamber and said feeder-compactor mechanism remaining in sufficiently close vicinity relative to each other during the reversing oscillating relative motion of said bale forming chamber to assure the transfer, deposition and compression of said fibrous material in said bale forming chamber in folded-like layers, each of said feeder-compactor roller assemblies comprising; a shaft rotatably mounted on a common frame, and a substantially cylindrical axially extending roller body securely mounted on said shaft to receive rotational drive, said shafts of said feeder-compactor roller assemblies being held substantially parallel to each other and substantially perpendicular to the direction of said reversing oscillating relative motion between said bale forming chamber and said feeder-compactor mechanism, a power transmission means connecting and operating said shafts of said feeder-compactor roller assemblies to cause the simultaneous rotation of each of said feeder-compactor roller assemblies in identical directions, said bale forming chamber and said feeder-compactor roller assemblies being interconnected by a plurality of flexible members to cause the simultaneous and reversing rotational motion of said feeder-compactor roller assemblies as said bale forming chamber performs its reversing oscillating motion, said plurality of flexible members being extended between properly selected structural members of said bale forming chamber and the rotational boundary surfaces of said feeder-compactor roller assemblies nearest to the point of attachment of said flexible members to said structural member of said bale forming chamber, said plurality of flexible members parially covering said intake port of said bale forming chamber to prevent the

undesirable exiting of said fibrous material already deposited in said bale forming chamber, a tying mechanism to tie together the fibrous material deposited in the bale, before this said compressed fibrous material is discharged from said bale forming chamber through said intake port, after the release of at least one set of said plurality of flexible members, a latching mechanism and a linkage system, both secured to the said substantially rectangular bale forming chamber and which are operated together to cause the release of said selected structural member of said bale forming chamber to thereby cause the said release of at least one set of the plurality of flexible members.

4,270,447

MOBILE INSTALLATION FOR THE COLD TREATMENT OF REFUSE

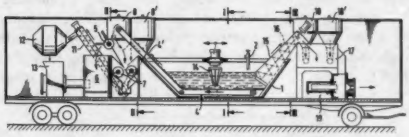
Dragutin Gregorovic, quai Marcellis 1, 4020 Liege, Belgium

Filed Aug. 24, 1979, Ser. No. 69,554

Claims priority, application Belgium, Nov. 20, 1978, 872.140

Int. Cl.³ B30B *15/30*

U.S. Cl. 100—70 R **7 Claims**



1. A transportable complete installation for the cold treatment of refuse, in particular household refuse, comprising:

a transportable elongated platform having in a central portion and extending over approximately half the length of said platform an elongated water basin, means for supplying water to said basin to provide a water bath therein,

a belt conveyor extending along the whole length of the bottom of said basin to a first end of said basin and then upwards to transport heavier elements of said refuse which sink to the bottom of said basin, out of said basin and to an elevated location above a first end portion of said platform,

first treating means on said first end portion of said platform comprising magnetic separating means positioned to act on said heavier elements to remove magnetic materials therefrom, means for crushing non-magnetic heavier elements discharged from said belt conveyor, first means for supplying additive material, first means for mixing said crushed elements with said additive material to form a first mixture, means for pressing said first mixture of heavier non-magnetic elements and additive material into blocks,

means for moving to the second end of said basin lighter elements of said refuse which do not sink, transport means for removing said lighter elements from said second end of said basin and raising said lighter elements to an elevated position above a second end portion of said platform, and

second treating means on said second end portion of said platform comprising second means for supplying additive material, means for mixing said lighter elements with said additive material to form a second mixture, and an extrusion press receiving said second mixture of lighter elements and additive material from said mixing means and compacting and extruding said second mixture.

4,270,448

PRINTING DEVICE

Chikao Tezuka, and Hitoshi Mikoshiba, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha, both of Tokyo, Japan

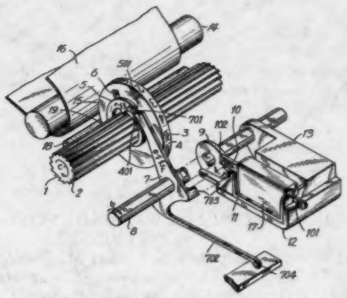
Filed Jul. 5, 1978, Ser. No. 922,132

Claims priority, application Japan, Jul. 6, 1977, 52-80699

The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.³ B41J *1/44*

U.S. Cl. 101—99 **8 Claims**



1. A printing device, comprising:

at least one character ring having printing characters on the periphery thereof;

a first rotatable shaft for supporting said character ring;

engaging means on said character ring for selectively operatively engaging said character ring with said first rotatable shaft for rotating a selected character on said ring from a stand-by position to a printing position and from said printing position to said stand-by position;

selection means for activating said engaging means into engagement with said first rotatable shaft and for deactivating said engaging means out of engagement with said first rotatable shaft and thereby initiating and terminating rotation of said character ring, respectively;

drive means including a second shaft having a magnetic disc mounted thereon, said drive means for rotating said magnetic disc for activating said selection means; and

electro-magnet means including a fixed coil and a moveable iron core adjacent to said disc, said iron core being free to slide within said fixed coil for making frictional contact with said disc and means for selectively activating the fixed coil for sliding said iron core into frictional contact with said disc to be moved thereby, said iron core cooperating with a portion of said selection means for actuating the engaging means into engagement with said first rotatable shaft for rotating said character ring.

4,270,449

METHOD OF PRINTING PLASTIC SURFACES

Yoshiyashu Ito, Yono; Takeo Sugiura, Tokorozawa, and Yoshikatsu Sawada, Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1979, Ser. No. 12,079

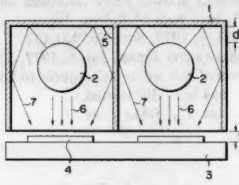
Claims priority, application Japan, Mar. 2, 1978, 53-23731; Oct. 3, 1978, 53-121684; Oct. 3, 1978, 53-121685; Oct. 12, 1978, 53-125543; Dec. 29, 1978, 53-162102

Int. Cl.³ G03G *13/14*; B41M *7/00*

U.S. Cl. 101—129 **16 Claims**

1. A method of printing a plastic surface which comprises the steps of drawing an image on the plastic surface, using an ink composition containing a coloring material; enclosing the plastic surface in a cover wherein there is placed a flash discharge tube; causing the flash discharge tube to emit light

beams; irradiating heat pulses on the plastic surface; applying pressure to the plastic surface due to the expansion of air in the



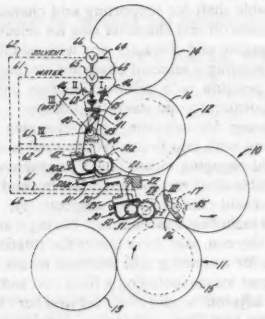
cover resulting from the application of heat pulses: and firmly fixing the inked image of the plastic surface.

4,270,450

ARRANGEMENT FOR WASHING CYLINDERS ON PRINTING PRESSES

Kurt Difflipp, Dietzenbach, and Harry M. Greiner, Offenbach am Main, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,661
Int. Cl.³ B41F *35/06, 9/01*
U.S. Cl. 101—142 **10 Claims**



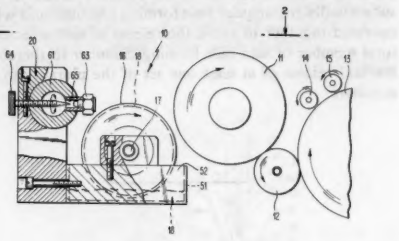
1. In a lithographic press the combination comprising a blanket cylinder and an impression cylinder, a washing assembly having a frame, the washing assembly including a washing roller journaled in the frame as well as a source of pressurized cleaning fluid for the roller, the roller having a porous resilient surface layer for carrying a charge of cleaning fluid, the frame having means for mounting the same for rocking movement from a disengaged position to a first washing position in which the washing roller is engaged with the surface of the blanket cylinder and a second washing position in which the washing roller is engaged with the surface of the impression cylinder for rotation at the same surface speed free of slippage, means for positively driving the washing roller at a differential surface speed while it is in its first washing position resulting in slippage at the engaged surfaces, manually actuated means for moving the frame successively into its washing positions, and means for causing said washing roll to be in a relatively less wet condition when it is in its second washing position, said means including an automatically engaged valve for turning on the source as the frame approaches its first washing position and for turning off the source as the frame leaves its first washing position.

4,270,451

ZONE CONTROLLED DAMPENING MEANS

Frank Perretta, Aux. Rte. 2, Marlboro, N.Y. 12542

Filed Apr. 12, 1979, Ser. No. 29,195
Int. Cl.³ B41F *7/30;* **B41L** *25/06*
U.S. Cl. 101—148 **4 Claims**



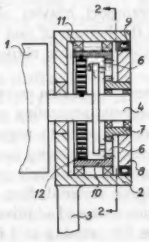
1. A dampening means for use in a printing press having a plate cylinder, a dampener roller adjacent the plate cylinder for applying a dampening solution thereto, an oscillating roller adjacent the dampener roller, said dampening means comprising; a plurality of circumferentially grooved, longitudinally spaced discs, axially aligned and positioned adjacent to said oscillating roller; a dampening solution source; the grooved circumferences of said discs so positioned as to be rotatable through said dampening solution source; and, a plurality of individually actuable means each adapted to direct air under pressure at one of the grooved circumferences of said discs towards said oscillating roller thereby distributing dampening solution from said circumferential groove into a fine spray onto the periphery of a section of said oscillating roller.

4,270,452

DUCTOR DRIVE

Peter Gertsch, and Robert Imhof, both of Berne, Switzerland, assignors to Maschinenfabrik Wifag, Switzerland

Filed Nov. 28, 1979, Ser. No. 98,029
Claims priority, application Switzerland, Dec. 14, 1978, 12886/78
Int. Cl.³ B41F *7/40, 31/14;* **B41L** *25/16, 27/16*
U.S. Cl. 101—148 **2 Claims**



1. An apparatus for cyclically decelerating and accelerating a ductor roller which has a journal which is mounted in a bearing head of a swing arm for rotation and which is movable with the swing arm to selectively and alternatively engage the ductor roller with first and second additional rotatable rollers in a liquid transfer unit of a printing press, comprising, a free rotating element located in the bearing head for free rotation, a planetary gear mechanism connected to the journal and to said free rotating element, controllable brake means disposed between the bearing head and said planetary gear mechanism for stopping rotation of a portion of the planetary gear mechanism and tensionable spring means disposed between said free

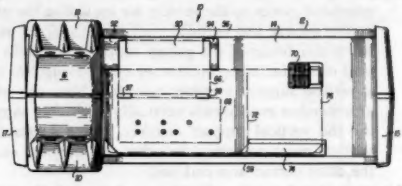
rotating element and said journal which is tensionable upon application of the brake to stop the planetary gear mechanism by the continued rotation of said free rotating element.

4,270,453

BIDIRECTIONAL IMPRINTER

Heinz F. Strohschneider, Plymouth, Mass., assignor to Dymo Industries Inc., Garden City, N.Y.

Filed Feb. 22, 1977 Ser. No. 770,628
Int. Cl.[3] B41F *3/04*
U.S. Cl. 101—269 **7 Claims**



1. An imprinter comprising

a print bed having a support therefor;

first and second printing members disposed in printing relationship with respect to said print bed, each of said printing members having raised printing indicia thereon;

a document overlying said first and second printing members;

a print roller carriage moveably mounted with respect to said print bed, said carriage having sidewalls respectively disposed adjacent opposite sides of said print bed and a first pair of slots respectively disposed in said sidewalls and slanted in a first angular orientation with respect to said print bed and a second pair of slots respectively disposed in said sidewalls and slanted in a second angular orientation opposite to said first angular orientation of the first pair of slots;

a first shaft, the ends of which are slidingly disposed respectively within said first pair of slots;

a second shaft, the ends of which are slidingly disposed within said second pair of slots;

a first print roller axially mounted on said first shaft so as to co-act only with said first printing member; and

a second print roller axially mounted on said second shaft so as to co-act only with said second printing member;

whereby movement of said carriage over said print bed in a first direction causes (a) said first print roller to so co-act with said first printing member and the document portion lying thereover that said first shaft is forced down said first pair of slots to thereby effect imprinting of the indicia on said first printing member onto said document and (b) said second print roller to so co-act with said second printing member and the document portion lying thereover that said second shaft is forced up said second pair of slots so that said second print roller rolls over said last-mentioned document portion without generating sufficient pressure to imprint the indicia from said second printing member onto said document and

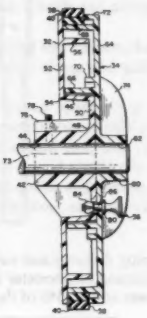
whereby movement of said carriage in the direction opposite said first direction causes (a) said second print roller to so co-act with said second printing member and the document portion lying thereover that said second shaft is forced down said second pair of slots to thereby effect imprinting of the indicia on said second printing member onto said document and (b) said first print roller to so co-act with said first printing member and the document portion lying thereover that said first shaft is forced up said first pair of slots so that said first print roller rolls over said last-mentioned document portion without generating sufficient pressure to imprint the indicia from said first printing member onto said document.

4,270,454

INKER RING WHEEL

Bernard J. Gill, Dundee; Burton L. Siegal, Skokie, and Randy P. Goettsche, Highland Park, all of Ill., assignors to Kiwi Coders Corporation, Wheeling, Ill.

Filed Nov. 5, 1979, Ser. No. 91,457
Int. Cl.[3] B41F *31/26*; B41L *27/28*
U.S. Cl. 101—348 **11 Claims**



1. An inker wheel for transferring ink to a printing member in a rolling contact engagement and adapted to be mounted on a shaft for rotation therewith, said inker wheel comprising:

a pair of axially mateable molded disc members formed of rigid machinable plastics material and releasably coupled together axially to define a hub and a recessed peripheral mounting rim for receiving a flexible inking ring engaged therein extending partially outward thereof, means for coupling said disc members together coaxially, said disc members comprising a driving member and a mounting member, each of said members having hub defining portions including a central axial passage, means to adjust said inker wheel to accommodate said inking rings of various widths comprising at least a first pair of axially extending, unitary annular rims provided on at least one of said disc members at different distances from and concentric with the axial passage thereof, the outermost one of said rims being narrower than the innermost rim, said rims and the adjacent outer disc portion together defining the inking ring receiving recess of the peripheral mounting rim with the inner one of said rims seating the inking ring, said means to adjust enabling said inking wheel to be adjusted to receive any inking ring which is no wider than said innermost rim and at least as wide as the difference in widths of said inner and outer rims by making at least the outermost one of said first pair of rims capable of selective reduction in width to increase the usable width of said recess so as to accommodate a wider inking ring.

4,270,455

BLASTING CAP BOOSTER ASSEMBLY

Florian B. Janoski, Allentown, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Filed Jan. 2, 1979, Ser. No. 273
Int. Cl.[3] C06C *7/00*
U.S. Cl. 102—318 **13 Claims**

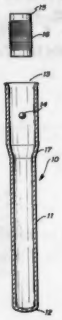
1. A water-proof blasting cap booster adapted to allow insertion of a blasting cap therein that will not detonate when subjected to fire or excessive heat comprising:

(a) an elongated shell having an open end and a closed end, said open end being adapted to permit the insertion and frictional engagement of the end of the blasting cap with said open end;

(b) a detonable explosive contained with said shell;

(c) a thermoplastic plug having a softening point temperature between the decomposition and initiation tempera-

tures of said explosive, coaxially mated within the open end of said elongated shell to provide a water-tight confinement of said explosives under normal conditions but



where said plug deforms and said confinement terminates when said blasting cap booster is subjected to a temperature that causes at least 5% of the explosive to decompose.

4,270,456

MOBILE APPARATUS FOR RECEIVING AND LAYING AN ASSEMBLED TRACK SECTION

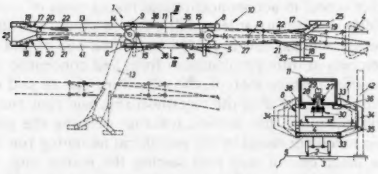
Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Apr. 10, 1978, Ser. No. 895,271

Claims priority, application Austria, Apr. 21, 1977, 2808/77; Jun. 30, 1977, 4681/77

Int. Cl.³ E01B *29/02*

U.S. Cl. 104—3 **10 Claims**



1. A mobile apparatus for receiving and laying an assembled track section consisting of rails fastened to ties, which comprises

(a) a transport vehicle movable along a track supported on a ballast bed, the vehicle having respective ends and longitudinally extending sides between the ends,

(b) an elongated overhead girder extending above the vehicle and having longitudinally extending sides, the girder defining a transport plane and being comprised of

(1) a main carrier extending substantially along the entire length of the vehicle and

(2) two carrier arms projecting beyond respective ones of the vehicle ends, the carrier arms having inner and outer ends and being pivotal in the transport plane,

(c) means pivotally mounting the inner ends of the carrier arms on the main carrier so as to avoid obstructing a neighboring track in a curve when a respective one of the carrier arms projects into the neighboring track,

(d) power drive means for pivoting the carrier arms in the transport plane,

(e) a guide track extending in the transport plane along the overhead girder,

(f) a trolley mounted on the guide track for movement therealong, the trolley including

(1) vertically adjustable hoisting means for lifting and lowering a respective one of the assembled track sections and for conveying the assembled track section along the guide track in the transport plane

(g) gantry supports for the overhead girder and adjustable between selected lateral positions respectively projecting beyong the longitudinally extending sides and leaving therebetween a wide enough space extending transversely to the track to permit the passage of an assembled track switch section therethrough, respective ones of the gantry supports being disposed at the respective vehicle ends and at the respective outer ends of the projecting carrier arms,

(1) the gantry supports including supports connecting the overhead girder to the vehicle for mounting the girder on the vehicle and vertically adjustable support means, the girder bridging the gantry supports and each support means including an arm member having two ends, a vertical support member extending from one of the arm member ends, means vertically adjustably supporting the vertical support member, and a substantially vertical pivot mounting the other arm member end on the outer carrier arm end, and

(h) means for laterally adjusting each one of the gantry supports independently substantially transversely to the elongation of the overhead girder and in a plane substantially parallel to the transport plane into the selected lateral positions.

4,270,457

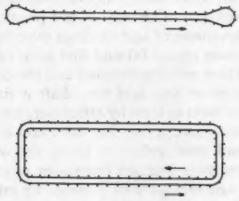
STAGGERED ACCESS TO ENDLESS LOOP CABLE TRANSIT SYSTEMS

David Kerber, 168 Beach 140 St., Belle Harbor, N.Y. 11694

Filed May 31, 1979, Ser. No. 44,199

Int. Cl.³ B61B *9/00, 13/14*

U.S. Cl. 104—25 **1 Claim**



1. A method of access to a transportation system in which an endless rope or cable draws a series of evenly spaced cabins or transport modules attached thereto in an endless loop comprising the steps of,

(a) stopping the endless rope and attached cabins at a given location to permit passenger transfer;

(b) driving the endless rope and attached cabins a short interval to another passenger transfer location;

(c) stopping the endless rope after said short interval of travel to permit passenger transfer;

(d) driving the endless rope and attached cabins a long interval to another passenger transfer location;

(e) stopping the endless rope after said long interval of travel to permit passenger transfer;

(f) repeating steps (b)–(e).

4,270,458
OVERHEAD TRACK ASSEMBLY FOR AMUSEMENT-PARK RIDE

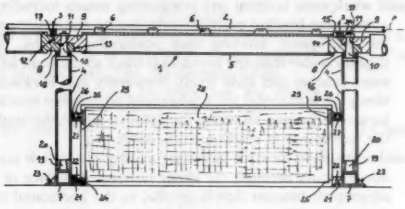
Anton Schwartzkopf, Münsterhausen, Fed. Rep. of Germany, assignor to Firma Anton Schwartzkopf Stahl- und Fahrzeugbeu, Münsterhausen, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,858

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832990

Int. Cl.³ B61B *5/02*

U.S. Cl. 104—124 **15 Claims**



1. A disassemblable overhead track assembly for an amusement-park ride, said assembly comprising:
- a plurality of bases adapted to rest on the ground in a longitudinally extending row;
- respective upright posts standing on said bases and each having an upper end having a support surface and a pin projecting upwardly therefrom;
- respective spacer means extending longitudinally between said posts and secured to same and to the respective bases for releasably connecting said posts longitudinally together and thereby establishing fixed longitudinal spacings between the respective posts and bases in said row;
- respective track sections above the respective spacer means and each including
- a central hollow beam having one end formed with an upper eye and another end formed with a lower eye;
- a pair of generally parallel rails flanking said beam and adapted to guide a car longitudinally along said beam, and
- transverse members interconnecting said rails and said beam rigidly; and
- holding means for releasably securing said sections in a continuous row one behind the other to said upper ends of said posts with each of said pins extending upwardly through the lower eye of one respective beam and through the upper eye of another respective beam.

4,270,459
CHAIN-TYPE ASCENT SYSTEM FOR ROLLER COASTER

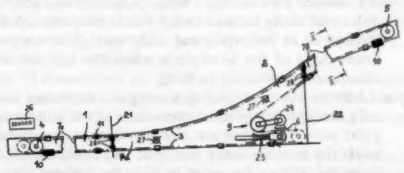
Anton Schwarzkopf, Münsterhausen, Fed. Rep. of Germany, assignor to Firma Anton Schwarzkopf Stahl- u. Fahrzeugbau, Münsterhausen, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,859

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832991

Int. Cl.³ B65G *17/38, 15/00*

U.S. Cl. 104—172 B **10 Claims**



1. A roller-coaster startup drive system comprising:
- an at least partially inclined track section having a low upstream end and a high downstream end relative to a predetermined direction of travel therealong, whereby a roller-coaster car can travel along said track section from said upstream to said downstream end;
- respective upstream and downstream wheels at said upstream and downstream ends;
- a pair of profile beams forming a guide and having juxtaposed flanges defining a slot extending between said upstream and downstream wheels and along said track section;
- a pair of substantially parallel and endless chains reeved over said wheels and extending along said guide between said beams;
- a multiplicity of shoes spaced apart along said chains and each bridging transversely between said chains, each shoe riding on said flanges in said slot, said chains being supported from said shoes at said slot inside said guide; and
- means for advancing said chains and thereby displacing said shoes along said beams from said upstream end to said downstream end.

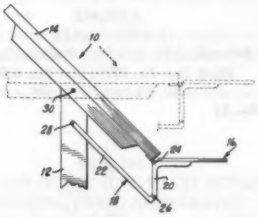
4,270,460
LINKAGE DEVICE FOR DRAFTING TABLES

Richard R. Husson, 310 Riverside Dr., Room #1904, New York, N.Y. 10025

Filed Jan. 8, 1979, Ser. No. 1,682

Int. Cl.³ A47F *5/12*

U.S. Cl. 108—3 **13 Claims**



1. A drafting table which comprises:
- a base;
- a drafting board pivotally mounted on said base to permit tilting movement of said drafting board between substantially horizontal and substantially vertical positions;
- a shelf adapted for attachment to said drafting board;
- an L-shaped bracket hingedly attached at the apex of said L-shaped bracket to said drawing board, one leg of said L-shaped bracket being substantially horizontal and having said shelf attached thereto and the other leg of said L-shaped bracket being substantially vertical;
- a straight bracket one end of which is pivotally attached to the end of said substantially vertical leg of said L-shaped bracket; and
- a U-shaped bracket having arms of unequal length, the shorter arm being pivotally attached to the opposite end of said straight bracket from the end of said straight bracket pivotally attached to said L-shaped bracket, and the longer arm being fixedly attached to said base at the point where said drafting board is pivotally mounted on said base.

4,270,461

PRESENTATION STANDS FOR THE SORTED EXHIBITION OF GOODS

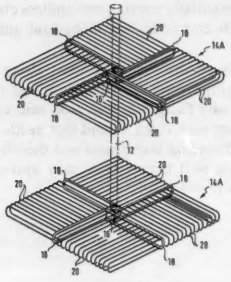
Werner Schramm, Munich, Fed. Rep. of Germany, assignor to PFP-Anstalt fur Produktentwicklung und Verwertung

Filed Mar. 19, 1979, Ser. No. 21,903

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812066; Feb. 22, 1979, 2906939

Int. Cl.³ A47B *41/04*

U.S. Cl. 108—31 **16 Claims**



1. A display stand for the sorted exhibition of goods in upright positions comprising:

an upright support;

a plurality of goods holders attached to and extending from said support in superimposed relation; and

a plurality of spaced yokes attached to and projecting from each holder with the yokes of adjacent superimposed holders being circumferentially offset so that goods positioned in the spaces formed between upper yokes will be supported on the adjacent, offset lower yokes.

4,270,462

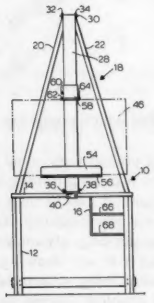
TABLE EASEL

Michael J. Driscoll, P.O. Box 989, Willits, Calif. 95490

Filed Jan. 26, 1979, Ser. No. 6,565

Int. Cl.³ A47B *41/04*

U.S. Cl. 108—32 **1 Claim**



1. A table easel wherein the workpiece can be held in a multiplicity of positions above the table on which the easel is mounted, said table easel comprising:

vertically disposed workpiece holding and positioning means for engaging and holding a generally flat and rectangular workpiece above the table on which the easel is mounted;

vertical support means fastened to the rear edge of the table top and extending upwardly from it to an attachment location where the said workpiece holding and positioning means is attached;

a flat horizontal track fixed securely to the table at both the front and rear major edges of the table top and adjacently spaced above it, the horizontal surfaces of said track being positioned parallel to the upper surface of the table top and substantially perpendicular to its front and rear edge, and said track being spaced high enough above said table top to allow the adjustment bracket which is pivotally attached to the lower end of said holding and positioning means to move forwardly and rearwardly along said track;

said workpiece holding and positioning means including an adjustment bracket pivotally attached to the lower end of the workpiece holding and positioning means, being slightly wider than the horizontal track so that said adjustment bracket can slide freely forwardly and backwardly along the horizontal track when said adjustment bracket is loosened thereby allowing the artist to adjust the angle of the workpiece in relation to the table top;

said adjustment bracket including a wing nut which screws downwardly through the upper horizontal surface of said adjustment bracket that is parallel to the horizontal track and upper table top surface, which, when tightened, holds the bracket securely in place on the horizontal track thereby fastening the workpiece holding and positioning means securely in place, and which, when loosened, allows the adjustment bracket to slide forwardly and rearwardly along the horizontal track thereby allowing the artist to adjust the angle of the workpiece in relation to the table top;

said holding and positioning means including a top clamp comprising a hollow rectangular part enclosing the holding and positioning means and slightly larger than said holding and positioning means so that it can slide freely upwardly and downwardly, and a flat part attached to said rectangular piece on its outer side parallel to the major upper surface of the holding and positioning means;

said top clamp including a wing nut screwing horizontally through one of the narrow sides of the hollow rectangular part of said top clamp, which, when tightened holds the top clamp securely in place on the holding and positioning means and which, when loosened, allows the artist to slide the top clamp upwardly and downwardly along the holding and positioning means, thereby changing the distance between the top clamp and the bottom clamp to accommodate workpieces of various shapes and sizes as well as adjusting the distance between the table top and the workpiece;

said top clamp having a plurality of small sharp pins projecting from the lower edge of the flat piece attached to the front side of the rectangular piece which penetrate the workpiece while it is on the easel and which, in conjunction with the ledge or L-shaped part of the bottom clamp; hold the workpiece in place;

said holding and positioning means including a bottom clamp comprised of a hollow rectangular part identical to the hollow rectangular part of the top clamp, and an L-shaped part attached to said rectangular part on the outer side of the hollow rectangular part and parallel to the major upper surface of the holding and positioning means;

said L-shaped part having a ledge perpendicular the rectangular part along its lower edge that is deep enough for the workpiece to rest upon and wide enough to support the lower edge of the workpiece when the top and bottom clamps are positioned to fit it;

said bottom clamp including a wing nut screwing horizontally through one of the narrow sides of the hollow rectangular part of said bottom clamp, which, when tightened, holds the bottom clamp firmly in place and which, when loosened, allows the artist to slide the bottom clamp upwardly and downwardly along the holding and positioning means thereby allowing the distance between the

bottom clamp and the top clamp to be changed to accommodate workpieces of various sizes and shapes as well as allowing the adjustment of the distance between the table top and the workpiece;

a table top with a flat surface perpendicular to said fixed vertical support means attached to its rear edge, having at least one storage compartment attached to its underside, having the said flat horizontal track attached to its front and rear edges, and being supported by a base; and

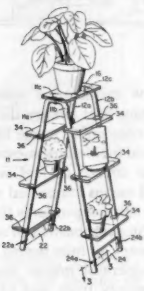
a base on which the table top is securedly mounted.

4,270,463

DISPLAY STAND WITH EASILY ADJUSTED SHELVES

Edward S. Korzon, Beacon Falls, Conn., assignor to Dura Plastics of New York, Inc., Bridgeport, Conn.

Filed Jul. 18, 1979, Ser. No. 58,614
Int. Cl.³ A47B 57/06
U.S. Cl. 108—96 **2 Claims**



1. A display stand for displaying flowers, plants, articles and the like, comprising:

first and second frame members each made of an elongated, round, rigid member that is bent at its center region to form two upwardly extending legs with an integral horizontal portion therebetween;

the legs of each frame member being inclined toward each other with the top portions closer together than the bottom portions, said horizontal portions having flat contact surface areas;

said frame members being positioned parallel to each other with corresponding legs of the two members spaced from each other;

rigid bracing means secured between each pair of corresponding parallel legs of said first and second frame members at or near the bottom of said legs;

a rigid, load supporting platform having a flat horizontal underside secured to the horizontal portion of said frame members;

a plurality of rigid, load supporting shelf members extending between corresponding and parallel legs of said two frame members, whereby said stand has the appearance of a ladder;

each shelf member having first and second round apertures extending through an edge region thereof, each aperture receiving a respective leg of a frame member in a sliding engagement, thereby to permit a shelf to be slid along a pair of legs of the frame;

a pair of elastomeric grommets tightly fitting on the respective legs of the frame members under each shelf for supporting said shelf in a cantilevered, load bearing manner between a respective pair of legs; and

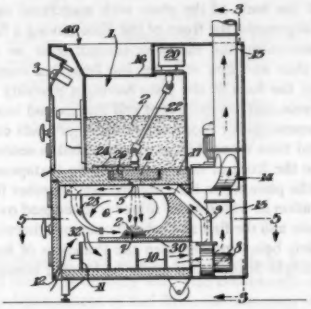
said shelves having a sufficient thickness and said apertures having sufficient radii to cause edges around said apertures to engage said legs in a manner to prevent said shelves from rotating from their desired horizontal positions when a load is placed on the shelves.

4,270,464

SMOKE GENERATOR FOR SMOKING FOOD PRODUCTS

Siegfried Kerres, Im Lerchenderg, D 7057, Winndnden-5, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,875
Int. Cl.³ F23K 3/00
U.S. Cl. 110—102 **3 Claims**



1. Apparatus for continuously generating smoke for use in smoking food products, which apparatus comprises:

a housing containing a chamber for holding sawdust and a chamber in which smoke is generated, and

means for continuously feeding dry sawdust at a desired rate from said sawdust chamber into said smoke generating chamber, and

heating means within said smoke generating chamber to ignite the dry sawdust fed thereinto, and

means for supplying excess fresh air into said smoke generating chamber to the dry sawdust sufficient to maintain said dry sawdust glowing at a temperature just below the flame point, and

duct means for exhausting the smoke produced in said smoke generating chamber from said chamber and for feeding the smoke to a smokehouse,

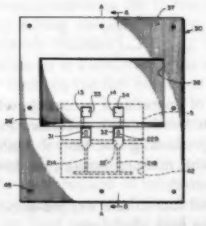
thereby providing apparatus for continuously smoking food products.

4,270,465

APPARATUS FOR SCREENING PASTE SOLDER ONTO LEADED HYBRID SUBSTRATES

Linda W. Lim, San Mateo, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed May 4, 1979, Ser. No. 35,953
Int. Cl.³ F23J 3/00
U.S. Cl. 110—127 **3 Claims**



1. A stencil for squeegee screening of paste solder onto a first plurality of component pads in a first area that is spaced from a second area containing a second plurality of lead pads, the pads being arranged in prescribed patterns on the front of a leaded substrate having lead tines on associated lead pads that

are proximate one edge of the substrate, comprising a plate having a thickness that is greater than the height that the tines project above the front of the substrate, and having pluralities of first and second openings extending through the plate and arranged in associated spaced apart areas in the prescribed patterns of the component and lead pads, respectively, so that associated openings and pads are in correspondence; said second openings being dimensioned for receiving associated ones of the tines therein when the front of the substrate is moved adjacent the back of the plate with associated openings and pads in alignment; the front of the plate having a first recess in it for decreasing the thickness thereof over an area that is greater than and that includes the first area containing first openings; the back of the plate having a plurality of adjacent slots therein that are elongated and that extend into associated second openings for receiving portions of leads connected to associated tines when the latter are located in second openings to enable the front of the substrate to be juxtaposed with the back of the plate when they are brought together for a screening operation in which paste solder is squeegeed over the front of the plate and the first and second openings therein, the depth of the slots being greater than the thickness of lead portions and/or height of tines that are to be located herein.

4,270,466

METHOD AND APPARATUS FOR RENDERING AN IGNITABLE FUEL-OXYGEN MIXTURE INERT

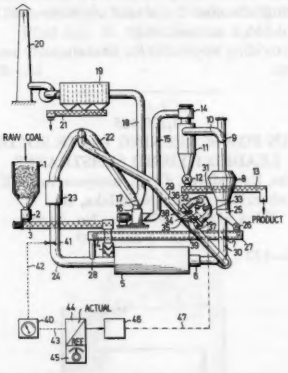
Jakob Ansen; Helmut Duill, both of Cologne; Heinz Fasbender, Krefeld, and Rupprecht Graf, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,486

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845980

Int. Cl.³ F23N *5/24*

U.S. Cl. 110—193 **12 Claims**



1. In a method of operating a process in which combustible solid particles mixed with air are circulated through a plurality of stages during processing and tend to build up an oxygen-enriched combustible mixture during shut-down, the improvement which comprises:

adding additional fuel to said oxygen-enriched combustible mixture during such shut-down,

burning the resulting mixture in a combustion zone separate from said plurality of stages, and

introducing the flue gas from said combustion zone back into said plurality of stages to thereby provide an inert gas therein.

4,270,467

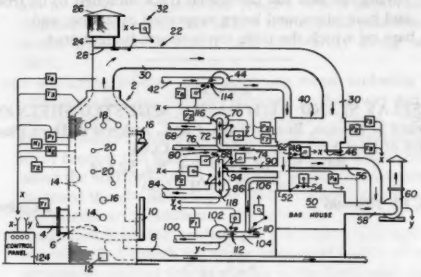
LOW MASS FLOW WASTE FUEL INCINERATOR

Dale E. Drake, Concrete, Wash., assignor to Enertherm, Inc., Mount Vernon, Wash.

Filed Jan. 14, 1980, Ser. No. 111,877

Int. Cl.³ F23J *3/00*

U.S. Cl. 110—216 **10 Claims**



1. A low mass flow incineration system for combusting waste fuel and extracting heat energy therefrom, comprising; incinerator means for consuming waste fuel by combustion, a source of waste fuel, said incinerator means including fuel inlet means connecting said source of fuel with said incinerator means, exhaust conduit means connected with said incinerator means for transmitting exhaust products therefrom, a source of primary air for supporting combustion of said waste fuel in said incinerator means, primary air inlet means for transmitting said primary air to said incinerator means, heat exchanger means for transferring heat energy from said exhaust products to a second medium, said exhaust conduit means including regenerative branch means connecting said incinerator means to said heat exchanger means, said incinerator means including coolant inlet means for supplying coolant medium to said incinerator means for reducing the temperature of said exhaust products during the process of combustion, inlet conduit means for supplying said second medium to said heat exchanger means, outlet conduit means for transmitting said second medium from said heat exchanger means, coolant supply conduit means connecting said outlet conduit means with said coolant inlet means for supplying said second medium to said incinerator means subsequent to passage of said second medium through said heat exchanger means, ambient air supply conduit means for supplying ambient air to said coolant inlet means, cooling fluid control means for controlling the flow of cooling fluid to said coolant inlet means and for selectively regulating the proportions of ambient air to said second medium reaching said coolant inlet means, said cooling fluid control means including valve means for selectively mixing said ambient air with said second medium or blocking the flow of either of said ambient air or said second medium to said coolant inlet means.

4,270,468

DISPOSAL OF WASTE PRODUCTS BY COMBUSTION

Edwin Robinson, Darlington, and David Buckle, Billingham, both of England, assignors to Deborah Fluidised Combustion Limited, Peterlee, England

Filed May 30, 1979, Ser. No. 43,926

Claims priority, application United Kingdom, May 31, 1978, 25698/78

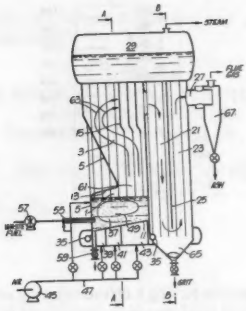
Int. Cl.³ F22B *1/02*; F23C *11/02*; F23G *7/00*

U.S. Cl. 110—245 **7 Claims**

1. A method for disposing of waste tar products such as waste products from the re-refining of oil, the method comprising forming in the combustion chamber of a membrane wall water tube boiler a particulate material bed including a base which is inclined upwardly from a first end thereof to a second

opposite end thereof, feeding air to said bed to effect fluidisation of said material and circulation of said material by movement thereof from said first end to said second end in an upper region of the bed and from said second end to said first end in a lower region of the bed, deflecting the fluidised material above the first end of the bed to assist the circulation of the fluidised material, heating the bed to a temperature in a range from about 850° C. to about 900° C., and feeding waste tar products to a position within the bed adjacent said first end.

4. A membrane wall water tube boiler comprising: a combustion chamber including means for receiving a bed of particulate material, said bed having opposite first and second ends



and a base which is inclined upwardly from said first end to said second end, means for feeding air to said bed to effect fluidisation of said material and circulation of said material by movement thereof from said first end to said second end in an upper region of the bed and from said second end to said first end in a lower region of the bed, deflection means located over the bed adjacent said first end to assist said circulation of the bed material, means for heating the bed, while fluidised, to a temperature of from about 850° C. to about 900° C., and means for feeding waste tar products such as waste products from the re-refining of oil to a position within the bed adjacent said first end.

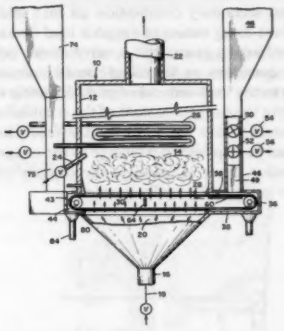
4,270,469

COAL-FEEDING MECHANISM FOR A FLUIDIZED BED COMBUSTION CHAMBER

Robert L. Gall, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 13, 1979, Ser. No. 65,771
Int. Cl.³ F23G 5/00
U.S. Cl. 110—245 **4 Claims**

1. A fuel feeding apparatus for a fluidized bed combustion system comprising an elongate vertically oriented combustion chamber, air inlet means at lower end of said chamber for supplying combustion supporting air into said chamber, discharge means at the upper end of said chamber for exhausting products of combustion from said chamber, the plurality of endless conveyor belts disposed transversely in said chamber in a side-by-side relationship with one another and with each conveyor belt projecting across the entire cross section of said chamber, each conveyor belt projecting into a compartment therefor disposed at a location laterally offset from said combustion chamber and opposite ends of adjacently disposed conveyor belt, discrete drive means coupled to each of said conveyor belts for driving adjacently disposed conveyor belts in opposite directions, discrete fuel supply means for each conveyor belt comprising a chute in registry with each said compartment, valve means associated with each chute to control the flow of fuel through the latter for providing the conveyor belt in registry therewith with a preselected quantity of fuel and for effecting delivery of said fuel into the combustion chamber from opposite sides thereof upon displacement of the oppositely moving conveyor belts by said drive means, and



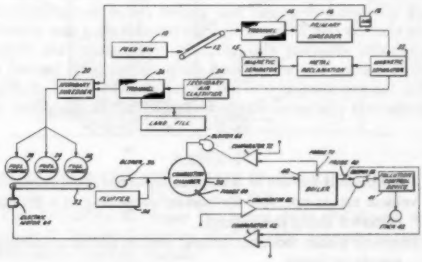
passageways through each of said conveyor belts for placing said air inlet means in registry with said combustion chamber to effect the displacement of fuel from the conveyor belts into said combustion chamber upon passage of air through said passageways.

4,270,470

COMBUSTION SYSTEM AND METHOD FOR BURNING FUEL WITH A VARIABLE HEATING VALUE

William O. Barnett, 38 Valentine La., Levittown, Pa. 19054, and William K. Barnett, 38 Deanna Dr. #112, South Somerville, N.J. 08876

Filed Apr. 27, 1979, Ser. No. 33,573
Int. Cl.³ F23G 5/00
U.S. Cl. 110—346 **13 Claims**



1. A method of providing useful heat energy from a fuel having variable heating value to meet a varying load demand of a heat using means comprising the following steps:

feeding said fuel having variable heating value into a preheated combustion chamber;

forcing combustion air at a controlled rate into said combustion chamber whereby the fuel burns and is converted into hot combustion gases;

discharging the combustion gases to the heat using means;

measuring the load demand of the heat using means;

varying the feed of combustion air in accordance with changes in the load demand of the heat using means;

measuring the oxygen content of the combustion gases;

and adjusting the feed rate of the fuel to the combustion chamber in accordance with change of the oxygen content of the combustion gases to maintain the oxygen content of the combustion gases substantially constant.

8. A system for providing useful heat energy from a fuel having variable heating value to meet a varying load demand

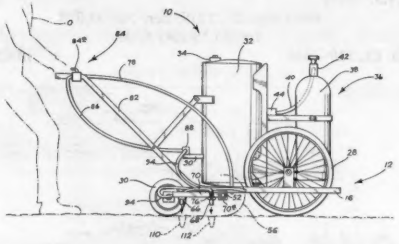
of a heat using means, said system comprising: storage means for storing a volume of fuel having a variable heating value, a combustion chamber in which said fuel can be burned and converted into combustion gases, feeder means for feeding the fuel to the combustion chamber, blower means for forcing primary and secondary combustion air into said combustion chamber, heat using means of variable load demand receiving the hot combustion gases, first control means controlling the amount of secondary air forced into said combustion chamber in response to the load demand of said heat using means, means for measuring the oxygen content of the combustion gases, and second control means for adjusting the feed rate of the fuel feeder means in response to a change in the oxygen content of the combustion gases to maintain the oxygen content of the combustion gases substantially constant.

4,270,471

MANUALLY PROPELLED APPARATUS FOR USE IN TRANSPLANTING CROPS

Gene B. Talbott, Box 173-D, Rte. 1, Banks, Oreg. 97106

Filed Apr. 2, 1979, Ser. No. 25,867
Int. Cl.[3] A01C *23/02, 11/02*
U.S. Cl. 111—6 **6 Claims**



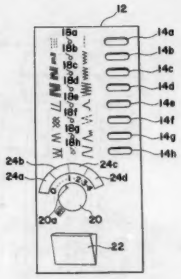
1. Apparatus for use in transplanting crops comprising:
vehicle means operable for manual propelling in a direction of travel along the ground;
reservoir means mounted on said vehicle means containing a supply of liquid;
pressurizing means for imparting fluid pressure against the liquid contained in said reservoir means, said pressurizing means including a vessel containing a fluid under pressure, said vessel being detachably connected to said reservoir means and removably mounted on said vehicle means;
boom means carried on said vehicle means extending generally transversly to the direction of travel, said boom means spanning above the ground;
dispensing means mounted on said vehicle means for receiving liquid under pressure from said reservoir means and injecting the liquid into the ground to form crop-receiving cavities, said dispensing means including a plurality of spaced-apart and liquid injecting nozzles mounted on said boom means; and
adjustable means mounted on said boom means for carrying preselected ones of said nozzles, said adjustable means being selectively positionable along the longitudinal axis of said boom means for predetermining lateral spacing of said nozzles.

4,270,472

INDICATION ARRANGEMENT FOR USE IN A SEWING MACHINE

Kazuo Suzuki, Higashiosaka; Hirokazu Koda, Gose; Kenichi Nakamura, Nara; Syuich Yoshikawa, Yamatokooriyama, and Naoki Ohara, Toyota, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Aisin Seiki Kabushiki Kaisha, Aichi, both of, Japan

Filed Jun. 12, 1979, Ser. No. 47,707
Claims priority, application Japan, Jun. 13, 1978, 53-71714
Int. Cl.[3] D05B *79/00, 3/02*
U.S. Cl. 112—158 E **11 Claims**



1. A sewing machine having a thread carrying needle which is reciprocated in an axial direction thereof and is jogged in a lateral direction, a cloth advancing mechanism for advancing a cloth in a direction perpendicular to the lateral direction at a predetermined pitch after every one stitch for forming a predetermined pattern of stitches, said sewing machine comprising:
a plurality of individual pattern information carrying means each provided for controlling the lateral movement of the thread carrying needle;
means for selecting any one of said pattern information carrying means;
means for producing a selected signal having a value indicative of the selected pattern information carrying means;
means for adjusting the pitch of cloth advance;
a plurality of illumination elements aligned along the pitch adjusting means; and
circuit means connected between the signal producing means and the illumination elements for lighting at least one predetermined illumination element upon receipt of the selected signal, said lighted illumination element indicating an available range of the pitch for the selected pattern information carrying means;
some of the possible values of said selection signal lighting more than one of said predetermined illumination elements.

4,270,473

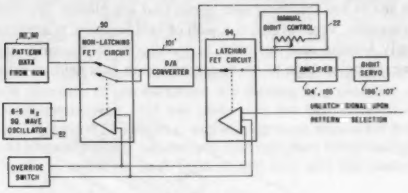
STITCH PATTERN VISUALIZATION

Michael J. Brienza, Ridgewood, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 15, 1980, Ser. No. 150,255
Int. Cl.[3] D05B *3/02*
U.S. Cl. 112—158 E **11 Claims**

5. A sewing machine having stitch forming instrumentalities at least one of which partaking of a first vibratory motion in one plane and a second vibratory motion in another plane for forming lockstitches, the first vibratory motion being independent of the second vibratory motion, wherein the amplitude of said first and second vibratory motions influence the appearance of said stitches: control means for independently regulating the amplitude of said first and second vibratory motions; and vibratory means for independently effecting said first and second vibratory motions so that said at least one of said stitch

forming instrumentalities will provide a visual representation of the actual amplitude of one of said first and second vibratory



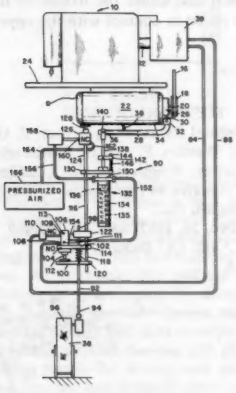
motions while the other of said first and second vibratory motions is suspended.

4,270,474

DUAL POSITION NEEDLE POSITIONER FOR STITCHING MACHINES

William A. Tice, 3620 N. Fountaincrest Dr., Knoxville, Tenn. 37918

Filed Aug. 17, 1979, Ser. No. 67,626
Int. Cl.[3] D05B *69/22*
U.S. Cl. 112—276 **4 Claims**



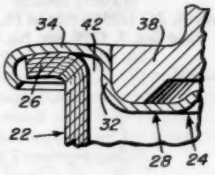
1. A pneumatic powered dual position needle positioner for a stitching machine including pedal means, a stitching mechanism comprising a reciprocatable needle and a drive shaft, comprising air motor means drivingly connected to said drive shaft of said stitching mechanism for rotation of said drive shaft upon actuation of said motor means, a source of pressurized fluid, means connecting said source of pressurized fluid to said air motor means, means selectively restraining rotation of said shaft means away from preselected rotation positions of said shaft, said last mentioned means including a least first and second piston-cylinder means each of which is interposed between said source of pressurized fluid and said air motor means and each of which is disposed adjacent to said drive shaft and each piston of which includes a portion exposed externally of said cylinder whereby movement of said piston within said cylinder in response to the admission of pressurized fluid into said cylinder functions to establish a limit to rotation of said drive shaft, valve means interposed between said source of pressurized fluid and said cylinder means, said valve means including an inlet port and first and second outlet ports, said inlet port being connected in fluid communication with said source of pressurized fluid and said outlet ports being connected in fluid communication with respective ones of said piston-cylinder means for selectively directing the flow of pressurized fluid to a respective one of said cylinder means, and means operatively connected between said pedal means and said valve means comprising a pitman assembly including a first pitman rod connected at one of its ends to said pedal means and at its other end operatively engageable with said valve means whereby selection of the position of said pedal determines the flow of pressurized fluid to said cylinders.

4,270,475

METHOD OF FORMING A FLUSH-SIDED CONTAINER

Wade D. Fletcher; Edward H. McMahon, and Dwight D. Grady, all of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Jul. 19, 1979, Ser. No. 58,747
Int. Cl.[3] B21D *51/00*
U.S. Cl. 113—120 K **6 Claims**



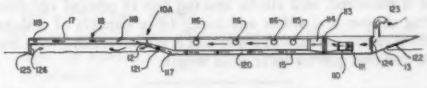
1. A method of seaming a metallic end cover to a tubular composite can body comprising the steps of providing a metallic end cover having a cup shaped projecting central pin of an external diameter sufficiently less than that of the internal diameter of the can body to define an annular space therebetween upon a central positioning of the central pin within one end portion of the can body, said metallic end cover further including an annular outwardly directed flange peripherally about said central pin, positioning said end cover over an end of the can body with the cover flange resting directly on said can body end and with the central pin received within the end portion of the can body in inwardly spaced relation to the surrounding can body, rolling said flange downwardly and inwardly into seam forming engagement with the can body end portion and substantially simultaneously inwardly deforming the formed seam and inwardly necking the end portion of the can body into the defined space and into intimate contact with the central pin of the end cover circumferentially thereabout.

4,270,476

BARGE CONSTRUCTION FOR WARM AIR CANOPY ICE-FREE ZONE

J. Cam O'Rourke; G. Roger Pilkington, both of Calgary, and Frank G. Bercha, Cochrane, all of Canada, assignors to Dome Petroleum Limited, Canada

Filed Jul. 5, 1979, Ser. No. 54,661
Int. Cl.[3] B63B *35/08*
U.S. Cl. 114—40 **12 Claims**



1. A barge comprising:

(a) a hull including a bow, a stern, a pair of sides, a flat bottom and a deck, said hull comprising a hull stabilization system including a lattice framework filled with solid insulation material;

(b) a cantilevered section extending forwardly from said bow and including longitudinally extending duct means, said cantilevered section including a skirt depending from the forward edge of said cantilevered section to below the waterline of said barge, said skirt comprising an outside

depending portion to project below the surface of the water and a shorter inside depending portion to terminate above the surface of the water, to define a hot gas chamber therebetween, said hot gas chamber being connected to said longitudinally extending duct means; and

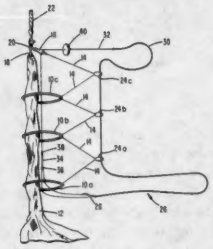
(c) a liquid/gas heat exchange system located within said hull for heating said gas with said liquid and projecting said gas into said longitudinally extending duct means, whereby said hot gas is projected towards said surface of said water through said hot gas chamber and the formation of ice is prevented thereby.

4,270,477

DEVICE FOR THE ACCELERATED LAUNCHING OF LIGHT SAILS

Jack W. Fretwell, Jr., 13354 Feldman Pl., Herndon, Va. 22070

Filed Sep. 7, 1978, Ser. No. 940,166
Int. Cl.[3] B63H *9/10*
U.S. Cl. 114—104 **8 Claims**



1. In a device for launching a light sail connected to the mast of a sailing vessel comprising at least two rings spaced from each other along the length of said sail and encircling said sail in furled condition, each said ring being of a size which, when positioned on the sail in the furled condition, provides upwardly slideable engagement with the sail, the lowermost ring engaging the lower portions of the sail, the uppermost ring engaging the upper portions of the sail and any intermediate ring or rings engaging intermediate portions of the sail when in the furled condition to retain said sail in furled condition, spacing line attached to each ring and the ring above it for positioning the rings at desired spaced apart positions along said sail in furled condition, and means for raising the lowermost ring into engagement with the next ring above it to raise said next ring and successively to raise all rings to slide said rings upwardly along said sail to disengage all rings from the sail and thereby launch the sail, the improvement wherein said spacing line is elastic and its length in stretched condition is at least one and one quarter times its relaxed length, said elastic spacing line being in stretched condition when said rings are in said desired spaced apart positions and urging said rings upwardly to speed the upward movement of said rings when said sail is launched, said elastic spacing line in relaxed condition being shorter and stiffer and being more capable of resisting entanglement than spacing line that is not stretchable to at least one and one quarter its relaxed length.

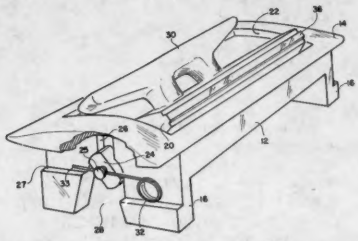
4,270,478

DISAPPEARING CLEAT OR FITTING

Charles F. Kafka, Bradenton, and Robert S. Kafka, Maitland, both of Fla., assignors to Meacham Marine Products, Inc., Sarasota, Fla.

Filed Mar. 28, 1979, Ser. No. 24,790
Int. Cl.[3] B63B *21/04*
U.S. Cl. 114—218 **19 Claims**

1. A rotatable device for marine use, comprising a housing adapted to be embedded in the deck of the boat, said housing having an opening defined therein in which is mounted a rotatable member, said rotatable member comprising a plate substantially flat on one side, and having affixed on its other side an upstanding fixture, said member being rotatably supported by a pair of parallel, oppositely extending shafts, at least one of which shafts has flattened side edges that are closely received in an elongate, vertical slot in a wall of said housing, bias means normally biasing said member upwardly in its housing, said bias means being able to be overcome such that said member



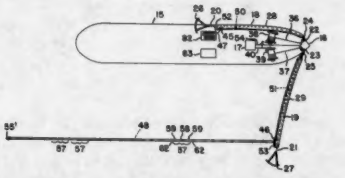
can be moved downwardly in its housing, this causing said oppositely extending shafts to be moved downwardly in their respective slots in said housing, said slots being enlarged at bottom locations to permit said member to be rotated 180° in either direction, such that either the fixture or the flat plate may be selected to reside in contact with the upper surface of the deck.

4,270,479

TORPEDO GUARDS

Judd O. Baker, Medford Lakes, N.J.; Jerome J. O'Brien, San Francisco, Calif.; Westley F. Curtis, Carderock, Md., and Frederick M. Varney, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 24, 1947, Ser. No. 793,660
Int. Cl.[3] B63G *9/00*
U.S. Cl. 114—240 A **13 Claims**



11. In a torpedo guard, a cable, a series of explosive units strung on the cable, and individual proximity fuses positioned on said cable for each of said explosive units, the proximity fuse for any given explosive unit being adapted to fire said given unit upon the approach of a torpedo within a predetermined distance from said given unit.

4,270,480

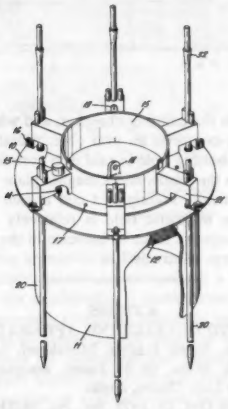
PINNED SUCTION ANCHORS

Roger H. Y. Hancock, East Kilbride, and Neil Kerr, Aberdeen, both of Scotland, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 14, 1978, Ser. No. 960,719
Claims priority, application United Kingdom, Nov. 14, 1977, 47354/77
Int. Cl.[3] B63B *21/27*
U.S. Cl. 114—296 **13 Claims**

1. A suction anchor for establishing an anchorage in a bed material comprising a top plate, a skirt member depending

from said top plate and having a lower edge engageable with said bed material to enclose an internal space, suction means for embedding said skirt member in said bed material by evacuating said space, and means for increasing the pull-out resistance of said anchor including a plurality of pin members positioned in spaced apart relation around the circumferential region of said top plate, pin drive means mounted on said top plate in fixed spacial relationship thereto and engageable with said plurality of pin members, for driving said plurality of pin members through said top plate into the bed material externally of said skirt member, and engagement means for holding said plurality of pin members to said top plate when said plurality of pin members have been driven into said bed material.



6. A suction anchor for establishing an anchorage in a bed material comprising a top plate, a skirt member depending from said top plate and having a lower edge engageable with said bed material to enclose an internal space, suction means for embedding said skirt in said bed material by evacuating said space, means for increasing the pull-out resistance of said anchor including pin drive means for driving at least one pin member into the bed material wherein said at least one pin member is housed within said skirt member, said skirt member having an aperture formed therein, said pin drive means further comprising means for driving said pin member through said aperture into the bed material after said skirt member is embedded in said bed material.

4,270,481

LEVER OPERATING DEVICE FOR GEAR-SHIFTING MEANS OF A BICYCLE OR THE LIKE

Etsuyoshi Watarai, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 24, 1978, Ser. No. 899,294

Claims priority, application Japan, Apr. 23, 1977, 52-52018[U]

Int. Cl.[3] **B60K** *20/06;* **F16C** *1/10*

U.S. Cl. 116—28.1 **11 Claims**

1. A lever operating device for a gear-shifting means of a bicycle comprising:

a fixed member fixed to a frame of the bicycle;

a shaft supported to said fixed member;

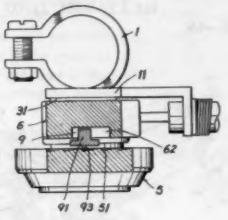
a lever supported rotatably with respect to said shaft;

a movable control wire for a gear shift having one end directly connected to one end of said lever;

an outer sheath covering for said control wire having one end corresponding to said one end of said control wire supported to said fixed member;

a cover mounted stationarily to said fixed member covering a boss of said lever and having marks thereon representing speed-change stages; said lever having an indicator for indicating the position of said lever, said indicator being movable in a given range with respect to said lever in the same direction as the turning of said lever;

means for providing a prescribed resistance against movement of said indicator; and,



means responsive to the turning of said lever for causing said indicator to remain stationary during a predetermined amount of movement of said lever and for thereafter causing said indicator to follow the turning of said lever lagging behind it a constant distance.

4,270,482

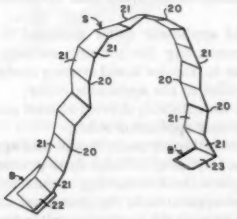
DROP MARKER

Robert J. Forsyth, College Place, Wash., assignor to North American Industries, Inc., Walla Walla, Wash.

Filed Jan. 12, 1978, Ser. No. 868,886

Int. Cl.[2] **G09F** *9/00*

U.S. Cl. 116—209 **10 Claims**



1. A drop marker, comprising:

a first base member;

a second base member;

an elongated streamer having transverse pleats folded accordion-style between the longitudinal ends thereof;

one longitudinal end of said streamer being fixed to said first base member;

the opposite longitudinal end of said streamer being fixed to said second base member;

the total area of said streamer being substantially greater than the total area of said first and second base members combined;

the weight per unit area of each of said first and second base members being greater than the weight per unit area of said streamer; and

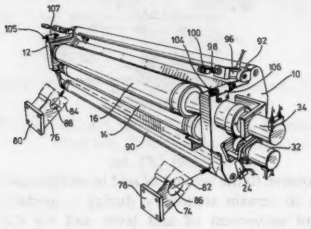
said streamer being foldable to a first condition in which it is stored flat between said base members with the base members substantially parallel to one another for reception in an ejection device for ejecting said marker from an aircraft into the air, with unfolding to a second condition in which the streamer is extended longitudinally with the base members at the respective ends thereof disposed at positions below the portion of the streamer to which attached.

4,270,483

PRINTING COATER

Denton G. Butler, 23 Halladier Pl., Islington, Ontario, Canada (M9B 2H4), and Andrew W. Lester, 30 Innis Cresc., Richmond Hill, Ontario, Canada (L4C 5K2)

Filed Dec. 26, 1978, Ser. No. 972,688
Int. Cl.³ B05C *11/00*
U.S. Cl. 118—46 **6 Claims**



1. An in-line coating apparatus for attachment to and use in conjunction with an offset lithographic printing press which has a final printing stage including plate, blanket and impression cylinders, said blanket cylinder engaging with said impression cylinder to print a sheet passing between the blanket and impression cylinders, said apparatus being adapted for continuous surface coating of items printed by said press and passing in contact with said blanket cylinder of the final printing stage thereof, the coating apparatus comprising:

a reservoir structure for receiving liquid coating compositions;

a cylindrical pick-up roller adapted to receive on its surface coating composition from said reservoir structure as it rotates;

a cylindrical applicator roller mounted to rotate with its surface contacting the rotating surface of said pick-up roller so as to transfer liquid coating composition from the pick-up roller to the applicator roller;

drive means for rotatably driving at least one of said pick-up roller and said applicator roller;

releasable mounting means to mount said apparatus adjacent the blanket cylinder of said final printing stage of said printing press, said mounting means being effective to secure the apparatus to the press and including control means for moving the applicator roll independently of said blanket cylinder so that the blanket cylinder remains in engagement with said impression cylinder, between a first, operative position in which said applicator roll is in engagement with the blanket cylinder of the final printing stage of said press and a second, inoperative position in which said applicator roll is disengaged from said blanket cylinder, said control means constituting means permitting said final stage optionally to be used as a printing stage and as a coating stage.

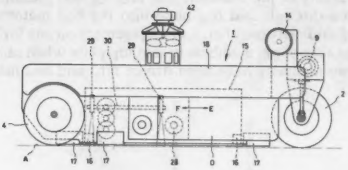
4,270,484

MACHINE FOR UNDERWATER PAINTING

Shirou Shimatani; Ryohji Orita, both of Tamano, and Tsuneo Obokata, Tokyo, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed May 24, 1979, Ser. No. 42,086
Claims priority, application Japan, Oct. 7, 1978, 53-123987
Int. Cl.³ B05B *15/04*
U.S. Cl. 118—305 **6 Claims**

1. In a machine for underwater painting of a metal surface of ships and offshore constructions which includes a frame, an open bottom painting chamber connected to the frame, pneumatic tire wheels on the frame operatively supporting the frame, an annular inflatable sealing tube surrounding the periphery of the open bottom of the painting chamber, electromagnets disposed on the frame about the painting chamber, one buoyancy tank fitted to the frame, and paint jetting nozzles disposed within the painting chamber, the improvement of the machine further comprising a further buoyancy tank symmetrically disposed on the frame on an opposite side from the one buoyancy tank, a ballast tank centrally disposed on the frame, means for maneuvering at least one of the wheels through a limited angular range, and means for moving the paint jetting



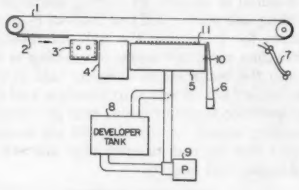
nozzles around in the painting chamber; and wherein the electromagnets each comprise an iron core, a coil wound about said iron core, a bolting hole in said iron core for affixing said electromagnet to the frame, and a magnet plate welded to said iron core hermetically sealing said coil in said core whereby the depth of the magnetic field is relatively great and the attenuation of magnetic force to increase in the distance from the metal surface is relatively low.

4,270,485

LIQUID DEVELOPING APPARATUS

Sadao Murasawa, Itami; Hajime Murakami, Moriyama, and Hiroshi Ichida, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Oct. 18, 1979, Ser. No. 86,038
Claims priority, application Japan, Oct. 23, 1978, 53-130276
Int. Cl.³ G03G *15/10*
U.S. Cl. 118—648 **4 Claims**



1. A liquid developing apparatus for electrophotography comprising means for horizontally moving an electrophotographic photoreceptor bearing a latent electrostatic image on its surface at a rate of 1 to 15 cm/sec while holding the photoreceptor with the latent image-bearing surface facing down underneath said means; a developing bath for a liquid developer for contacting the undersurface of the photoreceptor with a liquid developer contained in the bath when the photoreceptor passes over the bath, said developing bath being positioned under the above moving means; and a number of horizontally spaced developing electrodes in the form of bars disposed in the bath so that when the photoreceptor passes over the developing bath the upper surfaces of the electrodes are very near the undersurface of the photoreceptor, characterized in that the developing electrodes are placed horizontally and parallel to one another at an angle of 45° to 90° to the direction of movement of the photoreceptor; the upper surface of each electrode is substantially flat; the leading edge of said upper surface of each of the electrodes in relation to the direction of movement of the photoreceptor faces the undersurface of the photoreceptor at a constant distance of 0.2 to 1 mm; each of the bar-like developing electrodes has a vertical cross-section, the shape of which is a tetragon or its modified shape which can be

inscribed in a rectangle having a width of 0.2 to 10 mm and a height of 1 to 20 mm, the upper side of the rectangle being parallel to the undersurface of the photoreceptor; and the distance between any two adjacent electrodes is 0.4 to 5 mm.

4,270,486

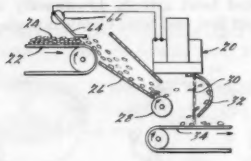
POWDER DISPENSING APPARATUS

Melvin E. Leverenz, St. Clair, Mich., assignor to Diamond Crystal Salt Co., St. Clair, Mich.

Continuation-in-part of Ser. No. 39,262, May 16, 1979, abandoned. This application Jan. 28, 1980, Ser. No. 115,672

Int. Cl.³ B05C *19/00*

U.S. Cl. 118—679 **18 Claims**



1. A dispensing apparatus for dispensing a particulated material on the surfaces of articles comprising a framework, discharge means for discharging a particulated material in the form of a transversely extending generally vertically oriented curtainous stream, slinger means disposed upstream of said curtainous stream for dispersing and propelling the articles through the upper section of said stream, and deflector means disposed downstream of said curtainous stream for intercepting and directing the articles back through an intermediate section of said stream to the upstream side thereof.

4,270,487

DEVELOPER REGULATING DEVICE IN DEVELOPING APPARATUS

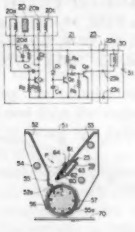
Isamu Terashima; Toshio Twubaki, and Masayasu Anzai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1978, Ser. No. 952,735

Claims priority, application Japan, Oct. 27, 1977, 52/128990; Jun. 7, 1978, 53/67659

Int. Cl.³ G03G *15/06*

U.S. Cl. 118—690 **8 Claims**



1. In developing apparatus having a developer container which receives a magnetic developer, conveyance means for conveying the developer from the developer container and bringing it into contact with a surface to-be-developed to develop an electrostatic latent image, and a developer sensor which is disposed at a predetermined position of the developer container, a quantity of the developer within the developer container being detected in accordance with an output of the developer sensor,

developing apparatus characterized by comprising:

an electric coil which is included in said developer sensor,

an oscillator circuit which includes said electric coil as one circuit element thereof,

means for mounting said developer sensor on said developer container so that an oscillating condition of said oscillator circuit may hold by sensing the developer of at least a predetermined level in said developer container and that the oscillating condition may fail to hold by sensing the developer below said predetermined level, and

means for detecting the quantity of said developer within said developer container in dependence on the presence or absence of an oscillation output of said oscillator circuit, wherein

said developer sensor has a moveable electric conductor at a position at which it is electromagnetically coupled with a coil conductor.

4,270,488

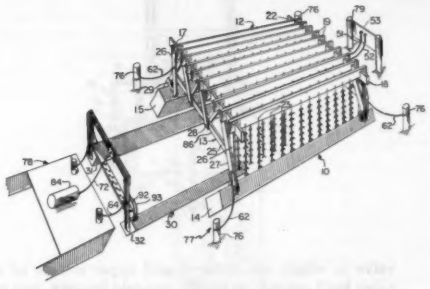
SYSTEM AND APPARATUS FOR CULTIVATING AND HARVESTING OYSTERS

George D. Kennedy, Rte. 2, Box 312, Palm Bay, Fla. 32905

Continuation-in-part of Ser. No. 839,125, Oct. 3, 1977, abandoned. This application Feb. 6, 1979, Ser. No. 10,079

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—4 **6 Claims**



1. A system for cultivating and harvesting oysters comprising an aquatic oyster cultivating apparatus having a pair of elongated pontoons that are laterally spaced apart and arranged in parallel, and a superstructure that is supported by said pontoons for suspending cultch material in the space between the pontoons, and a system for floating and submerging the cultivating apparatus, said superstructure being arranged to support the cultch material above the water surface when said apparatus is floating thereon and to support the cultch material above the water bottom when the apparatus is submerged and resting thereon, each of said pontoons having an elongated fore compartment and an elongated aft compartment, and said floating and submerging system having an air control system that is connected to the fore compartments of said pontoons and controllable to simultaneously flood or blow said fore compartments and further connected to the aft compartments of said pontoons and controllable to simultaneously flood or blow said aft compartments, said superstructure comprising a section bridging the space between said pontoons, said section having a pair of foot portions that straddle the respective pontoons, and said cultivating apparatus comprises flexible means engaging said foot portions and yieldably securing said section to said pontoons.

4,270,489

FISH-OPERATED AQUARIUM FEEDER

Osmo K. Joronen, 204-450 Simcoe St., Victoria, B. C., Canada (V8V1L4)

Filed Sep. 6, 1979, Ser. No. 73,138

Int. Cl.³ A01K *61/02*

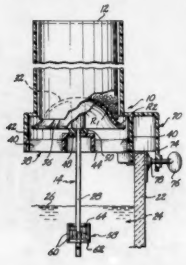
U.S. Cl. 119—51 R **6 Claims**

1. A fish-actuated feeder for dispensing substantially con-

trolled quantities of stored fish food into a water-filled container that houses fish, said feeder comprising:

a valve including a valve head having the upper surface thereof configured to define an upwardly-projecting, dome-shaped central region and an annular flange region that surrounds said dome-shaped central region, said annular flange including a plurality of circumferentially spaced apart grooves extending radially inward from the outer edge of said annular flange to the outer edge of said dome-shaped central region, each groove within said plurality of grooves having a width dimensioned to permit flow of a relatively small quantity of said stored food when fish food is supplied thereto, said valve further including an actuator rod extending downwardly from the lower portion of said valve head at a point in substantial alignment with the center of said domed upper surface of said valve head;

a housing including support means for positioning said valve with said valve head above the surface of the water containing said fish to be fed with a portion of said actuator rod extending downwardly into said water, said support means and said valve being cooperatively configured and arranged to establish a single equilibrium position of said



valve in which said dome-shaped upper surface of said valve head extends upwardly into said housing, said support means being further configured and arranged for pivotable movement of said valve head to rotate said dome-shaped upper surface relative to said housing when said actuator rod is subjected to angular deflection; and

a food container for containing said stored fish food, said food container including a substantially cylindrical wall, a closed end and an open end, said food container being dimensioned and arranged for placement on said valve head with said open end of said food container facing downwardly with that portion of said cylindrical wall adjacent said opening resting on said valve head, said dome-shaped upper surface of said valve head being symmetrically disposed within said opening of said food container when said valve is in said equilibrium position to prevent escapement of stored fish food, said dome-shaped upper surface of said valve head being rotated to move a portion of said valve head annular flange inwardly beneath said cylindrical wall of said food container to supply said fish food to at least one of said circumferentially spaced apart grooves when said actuator rod is angularly deflected in a predetermined direction.

4,270,490

ANIMAL FEED BOWLS

Larry F. Kopp, P.O. Box 265, Tofino, British Columbia, Canada

Filed Mar. 5, 1979, Ser. No. 17,189

Int. Cl.[3] A01K *5/00*

U.S. Cl. 119—61 **3 Claims**

1. A pair of animal feed bowls for holding and protecting food for an animal, comprising:

(a) a first open end feed bowl, comprising:

(i) a base;

(ii) a peripheral rim at said open end; and,

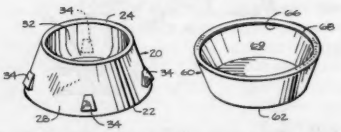
(iii) a peripheral side wall having an exterior surface extending upwardly from said base to said rim; and,

(b) a second open end feed bowl for additionally acting as a cover for said first feed bowl, comprising:

(i) a bottom wall; and,

(ii) a flexible resilient peripheral side wall having an interior surface extending upwardly from said bottom wall to the open end of said second feed bowl,

the bottom wall and interior surface of said second feed bowl being shaped to permit said second feed bowl to be inverted and placed as a closely covering cover over said first feed bowl, such that the bottom wall of said second feed bowl lies substantially flush with the rim of said first feed bowl, and the interior surface of said second feed bowl extends downwardly towards the base of said first feed bowl closely covering a substan-



tial portion of the exterior surface of said first feed bowl; and,

(c) cooperating means on said first and second feed bowls for releasably securing said second feed bowl in said inverted position as a closely covering cover over said first feed bowl, said cooperating means comprising:

(i) a flange forming an inwardly extending peripheral rim at the open end of said second feed bowl; and,

(ii) a plurality of wedge-shaped tabs disposed at spaced intervals on the exterior surface of the peripheral side wall of said first feed bowl, each of said tabs including an upper end and a lower end, the upper end merging with said exterior surface, the lower end extending downwardly from the lower part of said exterior surface for engaging the under side of said flange to releasably secure said second feed bowl to said first bowl in said inverted position as a closely covering cover over said first feed bowl.

4,270,491

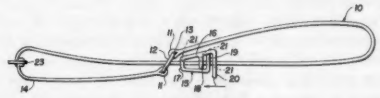
ANIMAL LEASH

Jack R. Cox, P.O. Box 1104, Myrtle Beach, S.C. 29577

Filed Oct. 16, 1979, Ser. No. 85,430

Int. Cl.[3] A01K *27/00*

U.S. Cl. 119—109 **1 Claim**



1. An animal leash comprising an adjustable figure-8 body portion including a first loop serving as a noose for the neck of an animal and a second loop serving as a handle, said body portion having two end loop terminals, a free sliding adjusting ring on the body portion and being attached to said end loop terminals, an adjustable stop element on the first loop serving as a noose, and a spring adjuster on the body portion on one side of said adjusting ring and being engageable with the adjusting ring to slide the latter along the body portion when the spring adjuster is in a released state, the spring adjuster being biased into frictional locking engagement with the body portion and being released from said locking engagement by the

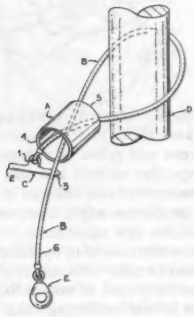
application of manual pressure to opposite sides of the spring adjuster, the spring adjuster being unitary and having forward and rear bars and at least two intermediate bars in parallel relationship with the forward and rear bars, all of said bars having apertures of sufficient size to receive the body portion slidably therethrough, the spring adjuster further comprising converging side bars both connected with the forward bar of the adjuster and one connected with the rear bar and one of the intermediate bars and the other connected with the other intermediate bar, whereby the application of said manual pressure to opposite sides of said adjuster will move the apertures of the intermediate bars into alignment with the apertures of the forward and rear bars, the spring adjuster when in a relaxed state having the aperture of at least one intermediate bar laterally unaligned with the apertures of the forward and rear bars.

4,270,492

QUICK HITCH FOR ANIMALS OR THE LIKE

Eugene E. Goheen, 22169 S. Garden Ave., Hayward, Calif. 94541

Filed Aug. 3, 1979, Ser. No. 63,394
Int. Cl.³ A01K *3/00*
U.S. Cl. 119—118 **2 Claims**



1. A device of the type described, comprising:
(a) a cylinder open at both ends;
(b) a rope with both ends extending through said cylinder and projecting from a first end thereof, the portion of rope projecting from the second end of said cylinder forming a loop and adapted to encircle an object to be hitched;
(c) a catch swingably connected to a first end of said rope and having rigid handles aligned with each other and projecting equally beyond the point of connection with the rope end so that their total length is greater than the cylinder diameter; this first rope end being adapted to be pulled for bringing the handles into contact with said cylinder first end and then the rope loop being tightened about the object to bring the cylinder second end into contact therewith; and
(d) a second rope end being adapted to be secured to an anchoring member, said catch being capable of being freed from said cylinder first end by being swung so the handles thereof substantially parallel the cylinder axis and permit the catch to move through said cylinder for releasing the device from said object.

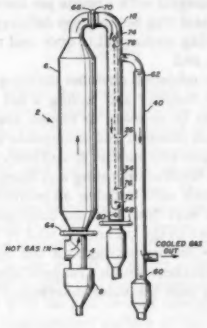
4,270,493

STEAM GENERATING HEAT EXCHANGER

Henry J. Blaskowski, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 8, 1979, Ser. No. 1,621
Int. Cl.³ F28D *7/00*; C10K *1/02*
U.S. Cl. 122—7 R **3 Claims**

1. A steam generating heat exchanger of modular design for cooling a high pressure, hot combustible gas laden with molten ash particles, comprising:
a. a first convective cooler comprising a vertically orientated cylindrical pressure containment vessel having a gas inlet in the top thereof, a gas outlet in the side thereof and located near the top thereof, and means disposed between the gas inlet and the gas outlet and extending along the axis of the first convective cooler for establishing a U-shaped gas pass therein so that the hot gas passes from the gas inlet down the first leg of the gas pass and up the second leg of the gas pass to the gas outlet;
b. a plurality of heat exchange tubes lining the interior of said first convective cooler;
c. a first in-line tube bundle disposed in the first gas pass of said first convective cooler;
d. a second in-line tube bundle disposed in the second gas pass of said first convective cooler;
e. means for receiving ash particles precipitating out of the hot gas flowing thru said first cooler, said means disposed beneath, secured to and opening into the bottom of said first convective cooler;
f. a radiant cooler comprising a cylindrical pressure containment vessel disposed upstream with respect to gas flow of said first vessel, having a gas inlet at the bottom thereof, a gas outlet at the top thereof;
g. a plurality of heat exchange tubes lining the interior of said radiant cooler thereby defining a radiant cooling chamber for cooling the hot gas;
h. means for conveying the gas from the gas outlet of said radiant cooler to the gas inlet of said first convective cooler;
i. a second convective cooler comprising a cylindrical pressure containment vessel disposed downstream with respect to gas flow of said first convective cooler, having a gas inlet at the top thereof, and a gas outlet at the bottom thereof;
j. means for conveying the gas from the gas inlet of said second convective cooler being connected to the gas outlet of said first convective cooler;
k. a third in-line tube bundle disposed in the gas pass of said second convective cooler; and
l. means for receiving ash particles precipitating out of the hot gas flowing thru said second convective cooler, said means disposed beneath, secured to and opening into the bottom of said second convective cooler.

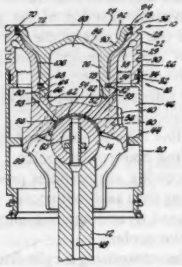


4,270,494

INSULATED OIL COOLED PISTON ASSEMBLY

Robert F. Garter, Dearborn; Nshan Hamparian, Brighton, and Litton T. Lee, Canton Township, Wayne County, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1979, Ser. No. 2,539
Int. Cl.[3] F01P *1/04*
U.S. Cl. 123—41.35 **2 Claims**



1. An oil cooled piston assembly for a diesel engine, said assembly comprising

a body member having an outer generally cylindrical ring belt section connected near its upper edge with a supporting wall integral with a piston pin connecting section, said wall and said ring belt section defining a cooling oil space for receiving cooling oil to cool said ring belt section and said wall, and

a separate combustion chamber defining member secured to said body member and having a hot wall with one side adapted to be exposed to engine combustion gases in a combustion chamber and an opposite side extending opposite and generally parallel to said body member supporting wall, said walls cooperating and being spaced apart intermediate their ends to define an enclosed insulating air gap that limits heat flow from the combustion chamber defining member to the oil cooled wall of the body member,

said air gap having throughout the major portion of its extent a thickness within a range of about 20% less than to 20% more than the value determined by the formula

$$b = \left(\frac{1500\,\nu^2}{\beta\, r\, \omega^2\, \Delta T} \right)^{\frac{1}{3}}$$

where:

b=air gap thickness

ν=kinematic viscosity of the air in the gap

β=the coefficient of thermal expansion of the air in the gap

r=radius of crank to which the piston is connected

ω=selected crank rotational speed in radians per second

ΔT=differential temperature across the air gap at said selected speed to minimize the combined effects of conductive and convective heat transfer and thus provide a maximum insulating effect through maintenance of an essentially stagnant air condition within the gap.

4,270,495

VARIABLE DISPLACEMENT PISTON ENGINE

Ferdinand Freudenstein, Riverdale, N.Y., and E. Roland Maki, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 31, 1979, Ser. No. 44,265
Int. Cl.[3] F02B *75/26*; F01B *31/14*
U.S. Cl. 123—54 B **4 Claims**

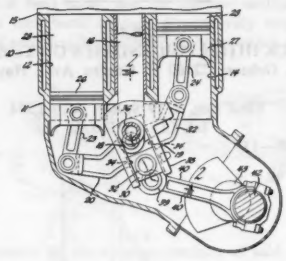
1. A balanceable variable displacement reciprocating piston engine comprising

a crank having a fixed longitudinal axis and a pair of longitudinally spaced crank arms extending in angularly opposite directions from said axis,

a pair of rockers pivotable on a rocker axis parallel with said crank axis and pivotally connected at points equally spaced from the rocker axis one each with couplers each connected with one of said crank arms,

said crank, couplers, and rockers forming a pair of equivalent four-bar crank and rocker linkages having opposing phase orientations,

a pair of oscillating links pivotable on a link axis parallel with said rocker axis along a control plane and adjustable in said control plane which passes through the rocker axis, said links each having a portion slidably engaging one of said rockers at points spaced from said link and rocker



axes so as to cause concurrent oscillation of the associated links and rockers about their respective axes, wherein a distance between said points of engagement of said links with their respective rockers and said rocker axis is adjusted by adjustment of said link axis in said control plane such that an oscillation angle traversed by said links is varied by such link axis adjustment,

a pair of pistons reciprocable in cylinders on parallel axes spaced from and parallel with said control plane, and

piston rods connecting each of said pistons with an extending arm of one of said oscillating links,

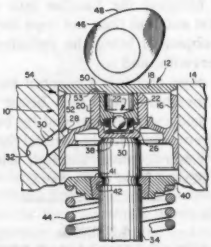
whereby rotation of said crank reciprocates said pistons in opposite phase relation and said adjustment of said link axis varies the piston stroke.

4,270,496

WELDED ARTICLE AND METHOD OF MAKING SAME

Sundaram L. Narasimhan, and Jay M. Larson, both of Marshall, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 973,058
Int. Cl.[3] F01L *1/14*
U.S. Cl. 123—90.51 **20 Claims**



1. A cam follower for an internal combustion engine, comprising:

(a) a base portion formed of an iron-carbon alloy having a carbon content in the range of about 0.05% to about 0.20%;

(b) a reaction portion having a wear resistant outer surface, said reation portion formed of a ferrous-carbon alloy having a carbon content in the range of about 0.60% to about 1.00%; and

(c) a weld zone joining said base and reaction portions, said weld zone including,

(i) a fusion product zone in which portions of said base and reaction portion are alloyed in a first composition,

(ii) a first heat effected zone in said base portion and adjacent said fusion product zone, said first heat effected zone characterized by a second alloy composition,

(iii) a second heat effected zone intermediate said reaction portion and said fusion product zone and characterized by a third alloy composition, said first and second heat effected zones having a transverse thickness substantially less than the width of said fusion product zone.

4,270,497

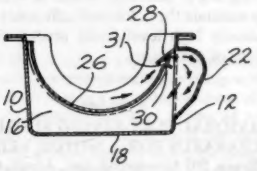
OIL PAN FOR INTERNAL COMBUSTION ENGINES

Robert M. Valerio, 6208 Selkirk, North Madison, Ohio 44057

Filed Aug. 22, 1979, Ser. No. 68,659

Int. Cl.³ F16N *31/00*

U.S. Cl. 123—195 C **7 Claims**



1. An oil pan for an internal combustion engine having a piston—piston rod—crankshaft assembly and having a pressurized engine lubrication system, said oil pan comprising; an elongated open-top housing having side and end walls and a bottom wall, said housing also having a main sump disposed in the bottom wall of the housing for containing oil therein, said housing also having a side sump disposed in and formed as a part of one side wall of the housing and in fluid flow communication with said main sump, an elongated windage tray open at both longitudinal ends semi-circular in cross-section and secured to and positioned longitudinally in the housing adjacent the side sump with the convex side down and spaced above the housing bottom wall, and a coacting elongated skimmer bar secured to and formed as a part of said side sump and positioned above and spaced from an upper edge of said tray adjacent the side sump for channeling oil skimmed off the tray into the side sump and thence into the main sump in controlled flow,

wherein said side sump is an outwardly bulging cavity formed in said one side wall and is configured in transverse section to effect a controlled orderly flow of oil received from the skimmer bar into the main sump, and wherein said windage tray is coated with an oil repellant coacting to reduce friction.

4,270,498

INTERNAL COMBUSTION ENGINE

Sergio Occella; Giulio Arietti, and Giampiero Borello, all of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Apr. 17, 1979, Ser. No. 30,807

Claims priority, application Italy, Apr. 18, 1978, 67872 A/78; Mar. 26, 1979, 67615 A/79

Int. Cl.³ F02B *19/10*

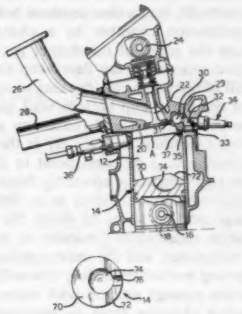
U.S. Cl. 123—276 **13 Claims**

1. An internal combustion engine of the type having a cylinder block, a number of cylinders therein, a cylinder head, fuel injectors for injecting fuel into each cylinder, a piston in each cylinder having a combustion chamber defined largely by a cavity recessed in the crown of the piston and spark ignition means having electrodes in communication with said combustion chamber; the improvements comprising:

the fuel injector for each cylinder is situated in a side wall of the cylinder in proximity to the cylinder head;

the cavity recessed into the piston is concentrated in one part of the crown of the piston so as to form squish areas for the combustible mixture between the crown of the piston and the cylinder head;

an insert containing an ignition pre-chamber, with which the electrodes of the spark ignition means communicate, is located in the side of the cylinder head opposite the fuel injector, said pre-chamber having in its lower part a mouth communicating with the interior of the cylinder;



the insert within which the pre-chamber is recessed has a baffle which projects substantially in the direction of the cylinder axis into the cylinder and which is superimposed in the top dead centre position of the piston on a part of the piston cavity, said baffle having an impingement surface facing towards the fuel injector; the mouth of the ignition pre-chamber being located adjacent the baffle but displaced towards the axis of the cylinder with respect to the impingement surface of said baffle; and

the fuel injector having means to direct a single fuel jet of narrow divergence onto said impingement surface while being arranged with the axis thereof substantially perpendicular to said impingement surface so that the impact of the jet against said impingement surface causes fine atomization of the fuel in the region of the cylinder in front of the mouth of the ignition pre-chamber.

4,270,499

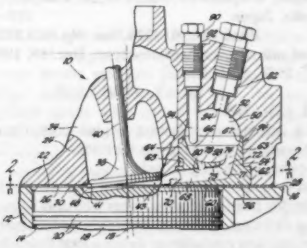
DIESEL ENGINE PRECOMBUSTION CHAMBERS

Arthur R. Frelund, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 3, 1979, Ser. No. 35,533

Int. Cl.³ F02B *19/18*

U.S. Cl. 123—293 **8 Claims**



1. In combination in a diesel engine, means defining a cylin-

der having an axis, a piston reciprocably carried in the cylinder and a cylinder head having a generally flat lower surface closing the end of the cylinder and defining in cooperation with the piston a main combustion chamber at the end of the cylinder, said cylinder head having adjacent inlet and exhaust ports opening to the combustion chamber and closed by poppet valves having heads and movable on axes inclined upwardly away from and on the same side of a plane passing through the cylinder axis such that the valve heads are canted with respect to the lower surface of the cylinder head so as to form, in closed position, wedge shaped v. ve recesses in the cylinder head surface, a precombustion chamber formed in the cylinder head on the side of the inlet and exhaust ports opposite the inclination of the valve axes and defined by a recess in the cylinder head closed by a flame cup having a bottom wall with an unbroken lower surface flush with the lower surface of the cylinder head, said valve recesses being connected with said precombustion chamber by a channel extending outwardly from the edges of the deeper portions of the wedge shaped valve recesses to the flame cup and a passage in the bottom wall of the flame cup, opening to said channel through the side of the flame cup bottom wall and extending to the precombustion chamber, said flame cup passage including a main portion extending transversely in the bottom wall from the side opening to a junction point in the wall, a primary opening portion extending upwardly from the junction point into the precombustion chamber at an obtuse angle with the main passage portion so as to direct the gas flow into the precombustion chamber in a manner to control the resulting swirl and turbulence, and the improvement comprising a secondary opening portion extending upwardly at an acute angle with the main passage portion with respect to flow into the precombustion chamber from an intermediate point of said main passage portion between its side opening and the junction point to an interior zone from which to receive the initial outflow of combustion gases passing through said gas passage.

8. A flame cup adapted for installation in a diesel engine cylinder head to form part of a precombustion chamber in said head, said flame cup comprising a floor with upper and lower surfaces, the upper surface defining an interior chamber portion, and a gas passage through the floor and connecting with the interior chamber portion, said gas passage comprising a main portion having a lower opening to the exterior of the floor and extending transversely between the upper and lower surfaces to a primary opening portion extending to the interior of the chamber, and a secondary opening portion extending only upwardly at an acute angle with the main passage portion with respect to flow into the chamber from an intermediate point of the main passage portion, the secondary opening portion extending into the chamber at an interior zone from which to receive an initial outflow of combustion gases into the gas passage.

4,270,500

INTERNAL COMBUSTION ENGINE WITH DUAL INDUCTION SYSTEM

Yasuhiko Nakagawa, Kamakura; Yukihiro Etoh, Yokohama; Meroji Nakai, Yokosuka, and Ryoji Nakajima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 4, 1978, Ser. No. 966,372

Claims priority, application Japan, Dec. 19, 1977, 52-152551; Feb. 17, 1978, 53-19113[U]

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—308 **12 Claims**

1. An internal combustion engine comprising a cylinder block having a cylinder form therein;

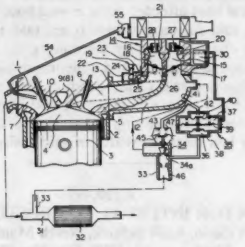
said cylinder having an axis;

a piston reciprocably mounted within said cylinder;

a cylinder head positioned over one end of said cylinder;

means defining a primary induction system having a primary passage and operable to direct a first fluid charge into said cylinder in a direction tangential with respect to the wall of said cylinder so as to cause said charge to swirl in said cylinder with said axis as the center of rotation, (fluid charge into said cylinder to swirl therein about said cylinder axis) under all of the operating conditions of the engines; and

means defining a secondary induction system having a secondary passage and operable to direct the second fluid



charge into said cylinder in such a direction as to impede the swirling motion of the first fluid charge and to provide a swirling about said axis which is sufficiently low to thereby maintain the volumetric efficiency of the engine at a sufficiently high level under predetermined operating conditions of the engine.

4,270,501

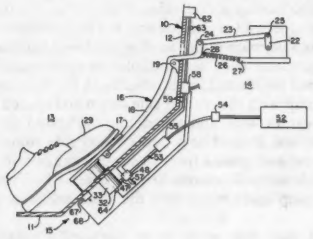
BEHAVIORAL FUEL-SAVING METHOD AND APPARATUS FOR A MOTOR VEHICLE

William C. Breen, 507 Greenwood Ave., Akron, Ohio 44320, and Richard E. Schulman, 105 Catherine St., Kalamazoo, Mich. 49007

Filed Dec. 18, 1978, Ser. No. 970,384

Int. Cl.³ F02B *11/08*

U.S. Cl. 123—350 **14 Claims**



1. An energy conservation system for a powered vehicle in which the fuel supplied is controlled by the operator depressing and releasing a foot pedal member in an operating range from a fully depressed position to an extended position comprising movement resisting means engageable with said pedal member within said operating range to resist the depression of said pedal member by the operator's foot, velocity measuring means, control means connected to said velocity measuring means and to said movement resisting means, said control means actuating discrete incremental preselected adjustments to said movement resisting means for changing resistance to depression of said pedal member within said operating range in response to communications from said velocity measuring means at predetermined vehicle velocities, said adjustments to said movement resisting means differentially increasing the effort required to depress said pedal member at higher velocities and differentially decreasing the effort required to depress said pedal member at lower velocities within said operating range so that the operator is constrained to reduce the occur-

rence and duration of vehicle operation at velocities over a predetermined vehicle velocity.

4,270,502

FUEL INJECTION PUMPING APPARATUS

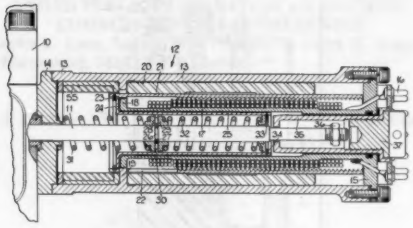
Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 4, 1979, Ser. No. 36,011

Claims priority, application United Kingdom, Jun. 10, 1978, 26656/78

Int. Cl.³ F02D *11/10*; F02M *59/24*

U.S. Cl. 123—357 **16 Claims**



1. A fuel injection pumping apparatus comprising an injection pump operable in use, in timed relationship with an associated engine to deliver fuel to a combustion space of the engine, a movable control member the axial setting of which determines the amount of fuel supplied at each injection stroke by the injection pump, a linear stepper motor including an output member coupled to the control member, a lost motion connection positioned between the output member and the control member whereby the output member can move to a new position even if movement of the control member is temporarily prevented, said stepper motor further including a housing, a sleeve mounted with the housing, said output member comprising a hollow cylindrical armature located within the sleeve and guided for axial movement thereby, an annular stator extending within the armature, electrical windings carried by the stator member and which can be selectively arranged to alter the relative axial setting of the armature and stator member, a tubular member located within the stator member, means coupling the armature to the tubular member, said control member extending through the tubular member, a first abutment defined on the internal surface of the tubular member and a second abutment defined on the control member, a pair of spring abutments slidable on the control member and located on the opposite sides of said first abutment, and a pair of resilient means acting on said pair of abutments respectively to maintain the spring abutments in engagement with said first and second abutments.

4,270,503

CLOSED LOOP AIR/FUEL RATIO CONTROL SYSTEM

Allen J. Pomerantz, Bancroft, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 17, 1979, Ser. No. 85,747

Int. Cl.³ F02G *3/00*; F02M *7/00*

U.S. Cl. 123—438 **3 Claims**

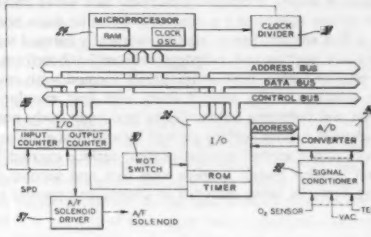
1. A fuel controller for a vehicle internal combustion engine having an intake space into which air and fuel are supplied and combustion space into which the air/fuel mixture from the intake space is supplied to undergo combustion, including, in combination:

supply means effective to supply a mixture of air and fuel to the intake space of the engine;

a sensor effective to supply a sensor signal representing at least the sense of deviation of the air/fuel ratio from a predetermined ratio;

a memory having a first group of memory locations addressable in accordance with specific values of an engine operating condition when the engine is accelerating and a second group of memory locations addressable in accord with said specific values of the engine operating condition when the engine is decelerating, each memory location in the first group addressed by the value of the engine condition having a number stored therein having a value determined to adjust the supply means to produce the predetermined ratio in the combustion space during engine acceleration and each memory location in the second group addressed by the value of the engine condition having a number stored therein having a value determined to adjust the supply means to produce the predetermined ratio in the combustion space during vehicle deceleration; and

control means effective to control the air/fuel ratio to the predetermined ratio, the control means including (a) means responsive to the sensor signal effective to adjust



the air/fuel ratio of the mixture supplied by the supply means to the intake space at a predetermined rate in the direction tending to produce the predetermined ratio and (b) means effective to preset the air/fuel ratio adjustment to the value of the number stored in the memory at the location in the first group addressed by the value of the engine operating condition when the change in the engine operating condition represents vehicle acceleration and at the location in the second group addressed by the value of the engine operating condition when the change in the engine operating condition represents vehicle deceleration, whereby the control means is preset to the value for producing the predetermined ratio in the combustion space during vehicle acceleration and deceleration substantially instantaneously to thereby compensate for variations in the air/fuel ratio of the mixture supplied by the supply means during engine transient conditions.

4,270,504

FUEL BOWL VENT

Robert Sciotti, Warren, and Michael Dougherty, East Detroit, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

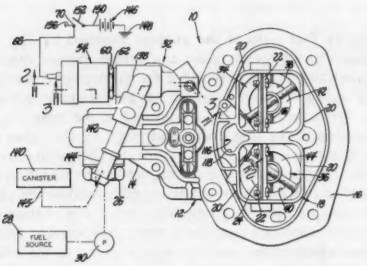
Continuation of Ser. No. 942,303, Sep. 14, 1978. This application Jul. 1, 1980, Ser. No. 164,982

Int. Cl.³ F02M *37/00*

U.S. Cl. 123—520 **3 Claims**

1. A fuel bowl vent system for an internal combustion engine having metered fuel supply means, induction passage means and fuel reservoir means, said fuel bowl vent system comprising vent passage means communicating with the interior of said fuel reservoir means with said induction passage means and with associated canister means, solenoid actuating means, resiliently deflectable valve means operatively connected to said solenoid actuating means, said solenoid actuating means being effective to move said valve means to at least first and second operating positions, said valve means being effective when in said first operating position to terminate said vent passage means communication as between said interior of said fuel reservoir means and said induction passage means, and said valve means also being effective when in said second

operating position to terminate said vent passage means communication as between said interior of said fuel reservoir means and said associated canister, said metered fuel supply means comprising carburetor means, said carburetor means comprising carburetor-defining body means, said induction passage means extending through said body means, said fuel reservoir means comprising a fuel chamber formed in said body means, said vent passage means comprising first conduit means formed in said body means and communicating with said fuel chamber, first chamber means formed in said body means and communicating with said first conduit means, second conduit means formed in said body means and communicating with said first chamber means and leading to said induction passage means, third conduit means formed in said body means and communicating with said first chamber means and leading to said canister means, said valve means being contained within said first chamber means, said solenoid actuating means comprising valve stem means operatively carrying said valve means, said valve means comprising a generally disc like main body portion, a first annular flange portion integrally formed with said main body portion and radiating outwardly therefrom, a second annular flange portion integrally formed with said main body portion axially spaced from said first annular flange portion and radiating outwardly of said main body portion, a first annular sealing surface carried by said first annular flange portion, and a second annular sealing surface carried by said second annular flange portion, said first and second annular sealing surfaces being directed in directions opposite to each



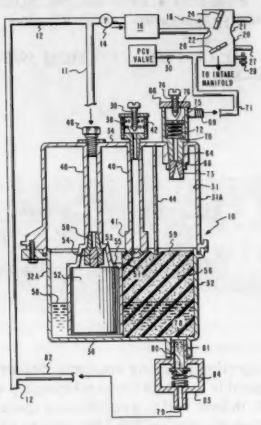
other, said third conduit means comprising second chamber means, said valve stem means extending through said second chamber means, at least a portion of said second chamber means being of a tapered configuration as to have a relatively smaller end, said relatively smaller end being situated generally nearer said first chamber means, said first annular flange portion defining a first outer periphery of relatively small diameter, said second annular flange portion defining a second outer periphery of relatively large diameter, said first annular sealing surface being disposed radially inwardly from said first outer periphery of said first annular flange portion, said second annular sealing surface being disposed radially inwardly from said second outer periphery of said second annular flange portion, said first relatively small diameter permitting said first annular flange portion to undergo at most limited resilient deflection thereof by said second chamber means as said valve means is being inserted into and through said second chamber means to thereby prevent damage to said first annular sealing surface, said second relatively large diameter permitting frictional engagement as between said second annular flange portion and said second chamber means as to thereby cause resilient deflection of said second annular flange portion as said valve means is being inserted into and through said second chamber means to thereby preclude damage to said second annular sealing surface, said second annular flange portion when received in said first chamber means resiliently moving radially outwardly to a normal condition wherein said second annular sealing surface generally circumscribes said second chamber means.

4,270,505

FUEL VAPORIZER SYSTEM

Randall W. Johnson, Hurst, Tex., assignor to Auto-Miser International Manufacturing Corp., Richardson, Tex.

Filed Mar. 16, 1979, Ser. No. 21,259
Int. Cl.³ F02M *17/22*
U.S. Cl. 123—522 **14 Claims**



1. A fuel distribution system comprising:

(a) a carburetor including a throttle valve and connected to the intake manifold of an internal combustion engine;

(b) fuel supply means for supplying fuel to said carburetor including a fuel reservoir, a pump, a first fuel line connecting said reservoir and said pump and a second fuel line connecting said pump and said carburetor;

(c) conduit means connected between said intake manifold downstream from said throttle valve and a PCV valve;

(d) a fuel vaporizer having fuel inlet means, air inlet means and vapor outlet means, said vaporizer comprising:

(i) a top wall, a bottom wall and side walls defining a sealed enclosure;

(ii) a fuel conduit depending internally from the top wall of said enclosure, the lower end of said fuel conduit containing an orifice defining a valve seat, said valve seat being positioned substantially equidistant from said top and bottom walls and a substantial distance from any side wall, the upper end of said fuel conduit communicating with said fuel inlet means;

(iii) float means supporting a needle valve aligned with and adapted for mating with said valve seat and preventing fuel flow therethrough when a predetermined fuel level is contained in the lower portion of said enclosure;

(iv) cage means defining a housing coaxial with said valve seat surrounding the vertical sides of said float means and extending below said predetermined fuel level, thereby preventing lateral movement of said float means with respect to said valve seat and damping vertical movement of said float means;

(v) a body of foraminous material having a relatively high ratio of surface area to volume positioned within said enclosure to cover a substantial portion of said bottom wall and extending above said predetermined fuel level;

(vi) check valve means controlling fluid flow through said vapor outlet means, said check valve means preventing fluid flow into said enclosure through said vapor outlet means and permitting fluid flow from said enclosure through said vapor outlet means only when there is a predetermined pressure differential across said check valve means; and

(vii) a divider extending from the top wall of said enclo-

sure to the top surface of said body of foraminous material between said air inlet means and said vapor outlet means whereby all air passing through said vaporizer must pass through said body of foraminous material;

(e) first conduit means for conducting fuel from said first fuel line to said fuel inlet means; and

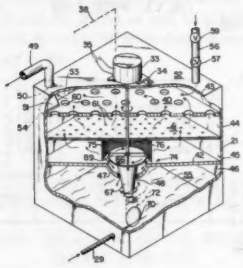
(f) second conduit means for conducting fluid from said check valve into said conduit means connected between said intake manifold downstream from said throttle valve and said PCV valve.

4,270,506

GENERATING VAPOR OF A VOLATILE NORMALLY LIQUID FUEL AND OPERATING AN INTERNAL COMBUSTION ENGINE THEREWITH

Charles L. Lowe, Laurel, Miss., assignor to Jacob H. Grayson, Hattiesburg, Miss., a part interest

Filed May 1, 1979, Ser. No. 35,264
Int. Cl.³ F02M *17/16*
U.S. Cl. 123—523 **35 Claims**



1. In apparatus for generating vapor of a volatile liquid fuel for an internal combustion engine and operating an internal combustion engine therewith, the said apparatus including vessel means containing the said fuel vapor thus generated in the interior thereof and an internal combustion engine, the internal combustion engine having a plurality of cylinders for combustion of the fuel vapor and air-fuel vapor supply means for supplying a combustible admixture of air and fuel vapor to the cylinders in response to reduced pressure within the cylinders, the said air-fuel vapor supply means including an intake manifold means in communication with the interior of the cylinders, air-fuel vapor conduit means in communication with the interior of the said intake manifold means and throttle means in the said air-fuel vapor conduit means upstream of the said manifold means whereby suction is applied to the said air-fuel vapor conduit means and a combustible admixture of air and fuel vapor is supplied to the cylinders as needed for operating the internal combustion engine at varying speeds controlled by the said throttle means,

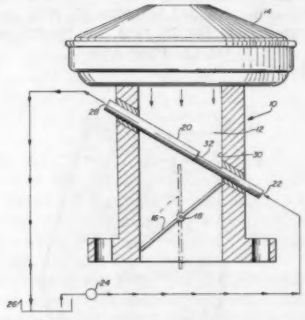
the improvement which comprises air-fuel vapor conduit means having first and second end portions, the said first end portion being in communication with the interior of the intake manifold means and the said second end portion being in communication with a first portion of the interior of the said vessel means containing the fuel vapor whereby when the internal combustion engine is operating the said air-fuel vapor supply means supplies fuel vapor to the cylinders and suction is applied to the said air-fuel vapor conduit means which causes fuel vapor to be withdrawn from the first portion of the said vessel means by suction and passed through the air-fuel vapor conduit means to the said intake manifold means, the interior of the said vessel means being maintained under a pressure no greater than the ambient atmospheric pressure and the contents thereof being unheated by an extraneous source of heat, means in a second portion of the interior of the said vessel means for vaporizing volatile normally liquid fuel for an internal combustion engine to thereby produce additional fuel vapor in the said vessel means, the said vaporizing means being effective for vaporizing unheated volatile liquid fuel at a pressure not exceeding the ambient atmospheric pressure and with the resulting fuel vapor phase in the said first portion being free of suspended liquid fuel droplets whereby the fuel vapor contained in the said first portion of the said vessel means is unheated by an extraneous source of heat, is under a pressure no greater than the ambient atmospheric pressure and is free of suspended finely divided liquid fuel, the said vaporizing means including means for withdrawing said unheated liquid fuel from a body thereof and introducing an excess of the resultant withdrawn liquid fuel into the said second portion of the vessel means, means including rotary means for producing through the action of centrifugal force a plurality of relatively large particles of liquid fuel from the said withdrawn liquid fuel, and means for further subdividing through an impact action the said relatively large particles of liquid fuel into a plurality of finely divided dispersible liquid fuel particles and dispersing the same in the said second portion of the vessel means to thereby vaporize a portion of the said withdrawn liquid fuel and produce fuel vapor, diaphragm means for dividing the interior of the said vessel means into the said first and second portions, the diaphragm means having a plurality of openings therein of a size to allow passage of the fuel vapor produced in the said second portion into the said first portion of the vessel means, the said openings in the diaphragm being of a size to retain the said relatively large and finely divided particles of liquid fuel in the said second portion of the vessel means, and means for withdrawing the said excess of liquid fuel from the said second portion of the vessel means.

4,270,507

CHARGE FORMING APPARATUS

Ronald R. Ralston, Elmhurst, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 23, 1979, Ser. No. 59,871
Int. Cl.³ F02M *7/14, 7/12*
U.S. Cl. 123—523 **2 Claims**



1. In a charge forming apparatus where fuel is supplied to one end of a generally tubular member positioned across a housing passageway having a generally cylindrical wall and where said tubular member has a generally upwardly directed slot over which air flows and strips fuel therefrom, excess fuel flowing from the other end of the tubular member to a return and to a fuel source, and where the quantity of air flowing across the slot is controlled by a butterfly valve having a pivoting vane spaced from the tubular member, the improvement comprising:

locating said tubular member across said passageway at an

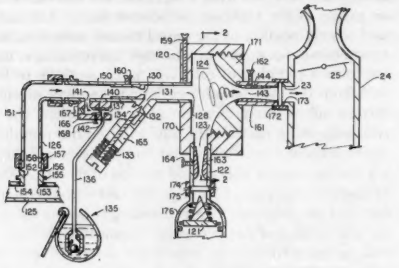
acute angle to said housing wall with said slot at the lowermost and supply end and closely adjacent to said wall.

4,270,508

COMBUSTION CONTROL SYSTEM

John E. Lindberg, Berkeley, Calif., assignor to U.S.A. 161 Developments Ltd., Berkeley, Calif.

Filed Oct. 12, 1979, Ser. No. 84,412
Int. Cl.³ F02B *47/08*; F02M *25/06*
U.S. Cl. 123—568 **20 Claims**



1. A combustion control system for an engine having an intake manifold with a throttle, a PCV gas inlet opening into said intake manifold, and an exhaust, including in combination:

a vortex device having a vortex chamber with a tangential inlet, a second inlet, and a axial outlet connected to said PCV gas inlet opening of said intake manifold, said tangential inlet of said vortex being connected to a supply of gas at substantially atmospheric pressure, and

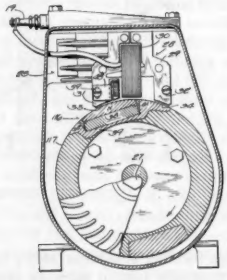
an exhaust gas conduit connecting the other said inlet of said vortex device to said engine exhaust.

4,270,509

BREAKERLESS IGNITION SYSTEM

Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Milwaukee, Wis.

Continuation of Ser. No. 885,398, Mar. 10, 1978, abandoned. This application Jan. 25, 1980, Ser. No. 115,547
Int. Cl.³ F02P *3/04*
U.S. Cl. 123—647 **3 Claims**



1. In an ignition system having a main core which supports a primary winding and a secondary winding and which includes a pair of leg portions which present a pair of spaced main pole faces that are positioned adjacent the orbit of a magnet which is carried by a rotating portion of an engine, the improvement therein comprising:

electronic switch means connected in circuit with the primary winding and being operable in response to a control signal to control the flow of current in said primary winding; and

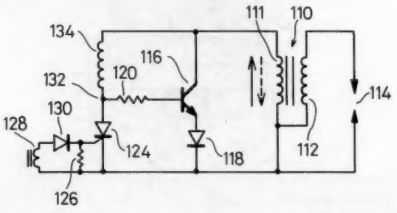
a biasing coil connected to generate a control signal to said electronic switch means and wound on a separate core element which is mounted between said leg portions of said main core and which provides a pole face that is positioned adjacent the orbit of said magnet and immediately alongside one of said main pole faces and in which said separate core element, biasing coil and electronic switch means are mounted on a bracket which is fastened to said main core.

4,270,510

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hirotoshi Nanjo, and Toshikazu Tsuji, both of Susono, Japan, assignors to Kokusan Denki Co., Ltd., Shizuoka, Japan

Filed Jul. 20, 1979, Ser. No. 59,331
Claims priority, application Japan, Jul. 28, 1978, 53/103057[U]
Int. Cl.³ F02P *1/08*
U.S. Cl. 123—648 **13 Claims**



1. An ignition system for an internal combustion engine comprising an igniting exciter coil; an ignition coil including a primary winding and a secondary winding; a transistor switch means having a base current input terminal and connected across the primary winding of the ignition coil, the transistor switch means being made conductive when a base current is supplied from the igniting exciter coil to the base current input terminal; a semiconductor switch connected to by-pass a base current to be supplied to the transistor switch means from the base current input terminal when the semiconductor switch is turned on; and a turn-on signal generating circuit for supplying a turn-on signal to the semiconductor switch at an igniting position of the engine;

characterized by further comprising a coil through which said base current input terminal of said transistor switch means is connected to the igniting exciter coil, so that the base current is supplied through said coil to said base current input terminal.

4,270,511

APPARATUS FOR SHOOTING A CURVE BALL

Goro Ehama, Fukuoka, Japan, assignor to Sun Sports Yohin Co., Ltd., Nagasaki, Japan

Filed Oct. 12, 1979, Ser. No. 84,240
Claims priority, application Japan, Oct. 14, 1978, 53-126402
Int. Cl.³ F41D *11/00*
U.S. Cl. 124—81 **7 Claims**

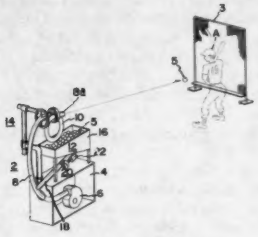
1. In an apparatus which shoots a ball through a flexible hose by means of air pressure, the improvement is characterized in that said apparatus further comprises,

(1) a circular loop holder which holds a shooting end portion of said flexible hose in a loop shape, formed by looping the flexible hose back adjacent to its self, and by passing said hose therethrough substantially perpendicular to a flat plane formed by said loop holder,

(2) a first loop-holder support means rotatably supporting

said circular loop holder on the axis of said loop holder, and

(3) a second loop-holder supporting means tiltably supporting said loop holder relative to an axis which is perpendicular to the axis of said loop holder,



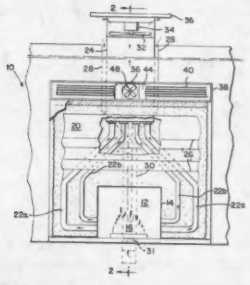
whereby along with the rotating of said holder on the axis of said loop holder and the tilting of said loop holder relative to said vertical plane, a variety of spins may be imparted to a ball to be shot.

4,270,512

HEAT STORING FIREPLACE

Robert E. Van Der Maas, 2020 NE. 127th St., Seattle, Wash. 98125

Filed Mar. 6, 1978, Ser. No. 883,651
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 **4 Claims**



1. A heat storing fireplace, comprising:

a firebox at least partially enclosing a combustion area;

a heat storage medium having a relatively high specific heat surrounding said firebox, said heat storage medium including a plurality of heat conductive bags containing a material having a high specific heat;

an exhaust outlet extending upwardly above said storage medium;

a plurality of heat conducting conduits positioned between said firebox and exhaust outlet in a circuitous route within said heat storage medium with said heat conductive bags stacked around said firebox and said heat conducting conduits such that heat from exhaust gases flowing through said conduits is stored in said heat storage medium; and

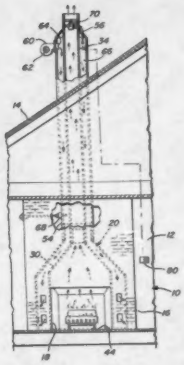
ventilation means allowing heat transfer from said storage medium such that heat may be generated during a relatively brief period and utilized over a relatively long period.

4,270,513

FIREPLACE FLUE HEAT EXCHANGER AND CONTROL

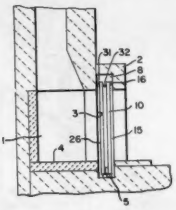
Mark M. Mitchelson, 1046 Bond St., Neosho, Mo. 64850

Filed Aug. 22, 1979, Ser. No. 68,769
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 **3 Claims**



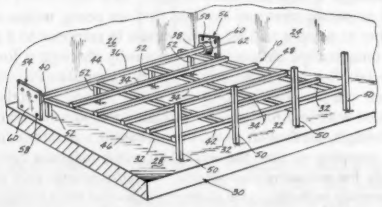
1. A fireplace heat exchanger and control for installation in a fireplace and the fireplace flue, said heat exchanger including means defining an open sided firebox including an upwardly tapering upper bonnet portion, an upstanding flue pipe including a lower end opening downwardly into the interior of said bonnet portion and an upper end portion for projecting above the roof line of a building containing said fireplace, a multi-walled outer housing enclosing said firebox and including a front wall having an opening therein through which said open side of said firebox opens, the upper portion of said housing tapering in transverse cross section and loosely enclosing said bonnet therein, and an upstanding flue liner loosely receiving said fire pipe therein, including a lower end opening downwardly into said upper portion of said housing and also including an upper end sealed about the upper portion of flue pipe, first air pump means for pumping ambient air into the upper portion of the interior of said liner exteriorly of said flue pipe, downwardly through said liner about said flue pipe and into the interior of said housing upper portion, at least one of the walls of said housing having outlet openings therein for exhausting heated air from said housing into a room of said building, said fireplace heat exchanger being enclosed within a fireplace structure including an upwardly extending flue passage through which said liner extends, first thermostat controlled actuating structure for said first air pump means and operative to actuate said air pump means in response to a rise in the temperature air passing downwardly through a lower portion said flue liner exteriorly of said flue pipe above a predetermined temperature, second air pump means operatively associated with said flue pipe for pumping flue gases upwardly therethrough, the first air pump means having a greater capacity for pumping air than the second air pump means, a control assembly for actuating said second air pump means, said control assembly including a room thermostat operative to actuate said second air pump means responsive to the temperature of room air dropping below a predetermined temperature, said first air pump means having a higher operational airflow capacity rating than the operational airflow capacity rating of said second air pump means.

4,270,514
FIREPLACE WITH SLIDING DOORS
Clifford D. Berry, Jr., 215 S. Mecca St., Cortland, Ohio 44410
Filed Jun. 1, 1979, Ser. No. 44,579
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—140 **3 Claims**



1. A fireplace comprising a heating chamber having a hearth and an open front, a wall extending laterally and upwardly from said fireplace front and also projecting farther forward than the hearth, a horizontal track disposed in front of the hearth below its upper surface, said wall being provided beside the fireplace with a vertical recess extending laterally away from the fireplace in line with said track, the recess being open at its fireplace end and receiving the adjacent end portion of the track, the recess also extending upwardly above the level of the open front of the fireplace, the wall above the fireplace front being provided with a downwardly opening slot extending laterally into the upper end of said recess, a frameless glass door normally located in front of the fireplace and extending up into said slot and part way into said recess, a metal channel receiving the bottom of said door, a pair of rollers on said track spaced lengthwise of said channel, means connected to the back of said channel rotatably supporting the rollers behind it, whereby the door is offset forward of said track, the door being supported by said rollers and movable along the track to retracted position in said recess, a vertical sealing strip mounted between the front surface of said recess and the door in engagement with both, a horizontal sealing strip mounted between the front surface of said slot and the door in engagement with both, the forwardly offset door pressing against said sealing strips, and a rigid horizontal rod mounted in said slot and recess behind the door and engaging the door near its top.

4,270,515
FIREPLACE HAVING INTEGRAL GRATE
Leonard J. Gordon, and Frank A. Myers, both of Auburn, Ala., assignors to Vega Industries, Inc., Des Moines, Iowa
Filed Oct. 11, 1979, Ser. No. 83,673
Int. Cl.³ F23H *3/04*
U.S. Cl. 126—164 **5 Claims**



1. An improvement in a fireplace comprising a hearth, having sides, a forward edge and a rear edge; side walls; and a back wall, said improvement comprising:

a pair of brackets, each of which is rigidly attached to one of said side walls adjacent said rear wall,

said brackets each having a cylindrical sleeve projecting perpendicularly inwardly from said sidewalls and terminating in an open cylindrical end, the cylindrical axes of said sleeves being in registered alignment;

a grate comprised of a plurality of first members extending in one direction and a plurality of second members extending in the opposite direction and being attached to said first members to provide a matrix configuration,

at least two upstanding members attached to said matrix configuration and extending above and below said matrix configuration adjacent said forward edge of said hearth;

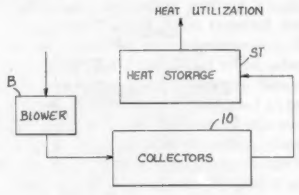
said grate being pivotally and removably mounted within said brackets,

said grate having at least two stub shafts extending laterally outwardly in opposite directions and being loosely fitted within said sleeves to provide a horizontal hinge axis for said grate, said sleeves completely surrounding said stub shafts,

said stub shafts terminating in outwardly presented ends, the distance between said outwardly presented ends being greater than the distance between said open cylindrical ends of said sleeves,

said sleeves each having a closed outer end, the distance between said outwardly presented ends of said stub shafts being less than the distance from said closed end of one of said sleeves to said open end of the other of said sleeves.

4,270,516
SOLAR ENERGY COLLECTOR
Thomas P. Hopper, Durham, and Everett M. Barber, Jr., Guilford, both of Conn., assignors to Sunworks, Inc., Guilford, Conn.
Filed Nov. 23, 1977, Ser. No. 854,153
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—417 **6 Claims**



1. A solar energy collector of the air heat exchange type comprising a rectangular housing, an absorber assembly within said housing, said absorber assembly comprising an upper wall, side walls and a bottom wall defining a closed duct through said housing, means thermally insulating said duct from said housing, openings defined in said housing at the ends of said duct, said upper wall comprising an absorber panel, a heat transfer member having high and low areas repeatedly extending between said upper and lower walls, and means bonding said heat transfer means to said absorber at said high areas and to said lower wall at said low areas to establish heat transfer paths from said top wall to said bottom wall, said heat transfer means being effective to transfer heat to air passing through said duct, said heat transfer means being in the form of a honeycomb defining a multiplicity of air passages through said duct.

2. A solar energy collector of the air heat exchange type comprising a rectangular housing, an absorber assembly within said housing, said absorber assembly comprising an upper wall, side walls and a bottom wall defining a closed duct through said housing, means thermally insulating said duct from said housing, openings defined in said housing at the ends of said duct, said upper wall comprising an absorber panel, a heat transfer member having high and low areas repeatedly extend-

ing between said upper and lower walls, and means bonding said heat transfer means to said absorber at said high areas and to said lower wall at said low areas to establish heat transfer paths from said top wall to said bottom wall, said heat transfer means being effective to transfer heat to air passing through said duct, said heat transfer means being in the form of a corrugated sheet with upper and lower ridges thereof bonded to said absorber, said ridges being disposed transverse to the direction of air flow through said duct, said sheet having a plurality of openings defined therein between said ridges with a tab from said openings extending in the direction of air flow through said duct.

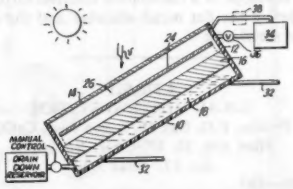
3. A solar energy collector of the air heat exchange type comprising a rectangular housing, an absorber assembly within said housing, said absorber assembly comprising an upper wall, side walls and a bottom wall defining a closed duct through said housing, means thermally insulating said duct from said housing, openings defined in said housing at the ends of said duct, said upper wall comprising an absorber panel, a heat transfer member having high and low areas repeatedly extending between said upper and lower walls, and means bonding said heat transfer means to said absorber at said high areas and to said lower wall at said low areas to establish heat transfer paths from said top wall to said bottom wall, said heat transfer means being effective to transfer heat to air passing through said duct, said heat transfer means being formed with upper and lower rows of corrugations struck from the plane of a sheet, said rows of corrugations being interrupted to form individual corrugation elements along a row, each of said elements having a surface bonded to one of said absorber and said bottom wall.

4,270,517

FLUID OPTICAL SWITCH FOR A SOLAR COLLECTOR

Richard B. Stephens, New Providence, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 4, 1979, Ser. No. 27,075
Int. Cl.[3] F24J *3/02*; G05D *25/00*
U.S. Cl. 126—422 **9 Claims**



1. A fluid optical switching means to provide controllable reflection of incident light, said switching means comprising:

a photoreceptive layer responsive to incident photon energy;

a relatively thin optical scattering layer interposed between said photo-receptive layer and a source of light energy, said scattering layer comprising a highly dispersed, multisurfaced layer of an essentially transparent material having a predetermined index of refraction dispersed in a second light transmitting media having an index of refraction differing from the index of refraction for said material;

a layer of optically transparent fluid media, contiguous to said multisurfaced scattering layer and contacting essentially all surfaces thereof, said fluid media having an index of refraction about equal to the refractive index of said scattering surface, whereupon contacting said scattering layer with said fluid of matched refractive index, said layer is rendered transparent;

container means having at least one light transparent window, said container means retaining said fluid media contiguous to said scattering surface and maintaining an interpositioning of the scattering layer between said absorbing surface and said transparent window;

fluid extracting means for controllably removing the optical fluid media from said container and further from contacting said multisurfaced scattering layer, whereupon removing said fluid from contacting said scattering layer, light incident at virtually any angle relative to said scattering layer is diffusely reflected from said multisurfaced scattering layer.

2. A solar thermal energy converter having fluid optical switching means providing temperature limitation to said converter, said converter comprising:

solar radiation absorbing means to collect incident sunlight energy and convert said sunlight energy into heat energy;

thermal transfer means for conductance of heat energy from the collector;

a relatively thin optical scattering layer interposed between said photo-receptive layer and a source of light energy, said scattering layer comprising a highly dispersed, multisurfaced layer of an essentially transparent material having a predetermined index of refraction dispersed in a second light transmitting media having an index of refraction differing from the index of refraction for said material;

a layer of optically transparent fluid media, contiguous to said multisurfaced scattering layer and contacting essentially all surfaces thereof, said fluid media having an index of refraction about equal to the refractive index of said scattering surface, whereupon contacting said scattering layer with said fluid of material refractive index, said layer is rendered transparent;

container means having at least one light transparent window, said container means retaining said fluid media contiguous to said scattering layer between said absorbing surface and said transparent window;

fluid extracting means for controllably removing the optical fluid media from said container and further from contacting said multisurfaced scattering layer, whereupon removing said fluid from contacting said scattering layer;

light incident at virtually any angle relative to said scattering layer is diffusely reflected from said multisurfaced scattering layer;

fluid replenishing means for controllably replacing the optical fluid media extracted from said contain means.

4,270,518

CONTROLLER FOR CONDENSER-SIDE-STORAGE SOLAR HEAT-PUMP SYSTEMS

Richard C. Bourne, Davis, Calif., assignor to The Board of Regents of the University of Nebraska Regents Hall, Lincoln, Nebr.

Filed Apr. 30, 1979, Ser. No. 34,734
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—422 **33 Claims**

16. Apparatus for controlling a condensor-side-storage solar heat-pump system comprising:

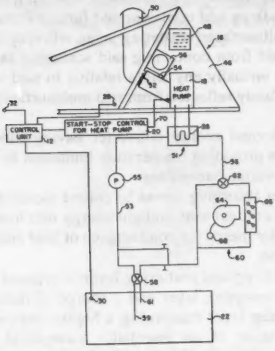
a solar collector;

a storage medium;

means for periodically withdrawing heat from the solar collector and transferring it to the storage medium;

said means for periodically withdrawing heat including heat-pump means for transferring the heat from the solar collector to the storage medium periodically; and

said heat-pump means including control means for operating the heat pump more as one of the temperature difference



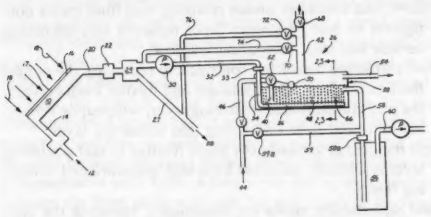
between the collector and outdoors decreases and storage temperature decreases.

4,270,519

SOLAR HEATING SYSTEM

Charles Haynes, 765 W. Broadway, Vancouver, B.C., Canada (V5Z 1J5)

Filed Jan. 22, 1979, Ser. No. 5,246
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **3 Claims**



1. A solar energy heating system adapted to provide preheated water and/or air to a building structure, comprising:

a. a heat absorptive surface defining an air heating chamber having a cool air inlet and a hot air outlet end, positioned at a first location at said building structure to receive radiant heat from solar energy,

b. a heat exchange tank at a second location at said building structure removed from said first location, said tank defining an enclosure therein and adapted to contain a quantity of cool water to be heated therein,

c. conduit means connecting said air heating chamber and said heat exchange tank to transmit heated air from said chamber to said tank,

d. means to discharge heated air from said air heating chamber as bubbles into said heat exchange tank,

e. first and second valve means positioned at said cool air inlet end and said hot air outlet end of said air heating chamber, said valve means being adapted to be opened and closed responsive to pressure changes in said air heating chamber, such that said first valve means at said cool air inlet end opens to admit ambient air and said second valve means at said hot air outlet end opens to permit outflow of heated air under pressure,

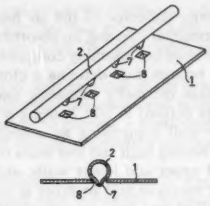
whereby hot air may be pumped from said air heating chamber to said heat exchange tank by the expansion of air within said air heating chamber and subsequent release of said heated air through said second valve means.

4,270,520

SOLAR COLLECTOR COMPRISING AN EVAPORATION/CONDENSATION SYSTEM

Faramarz Mahdjuri, Bergamo, Italy; George A. A. Asselman, and Johan C. de Grijs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1979, Ser. No. 5,735
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804411
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **1 Claim**



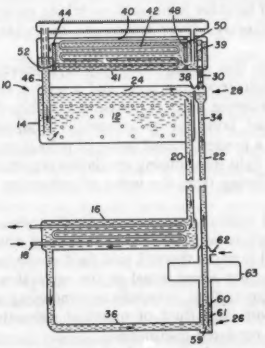
1. A solar collector which comprises a flat metal absorber for solar radiation; a separate closed elongate metal tube containing a vaporizable heat transport medium, said metal tube having an evaporation zone in direct thermal contact with the flat metal absorber and a condensation zone arranged at a higher level than the evaporation zone, the heat transport medium being vaporized in the evaporation zone and the resulting vapours being condensed in the condensation zone during operation; recesses formed in said flat metal absorber adjacent said metal tube, said recesses being spaced from each other longitudinally of the metal tube; a number of hollow protrusions extending outwardly and downwardly from the evaporation zone of the metal tube and respectively projecting into said recesses, said protrusions being spaced along the length of the evaporation zone and providing traps for the collection of heat transport medium condensate returning to the evaporation zone under the influence of gravity; and an evacuated envelope of a transparent material surrounding and accommodating the flat metal absorber and the evaporation zone of the metal tube.

4,270,521

SOLAR HEATING SYSTEM

Carroll E. Brekke, P.O. Box 1875, San Jose, Calif. 95109

Filed Aug. 15, 1979, Ser. No. 66,525
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **22 Claims**



1. A liquid containing a solar heating system having a higher level having a solar heat collector and a lower level having a

heat exchanger below said collector, said system having a liquid therein, said exchanger extracting heat from said liquid and thereby forming a cooled liquid, an improvement comprising:

pressure maintaining means for maintaining said collector at a pressure such that said liquid therein boils and produces a vapor at a temperature below the boiling temperature of water at atmospheric pressure;

a conduit having a top portion and a bottom portion and communicating said lower level in said system with said higher level in said system, said conduit having a column of said liquid therein;

a lift tube in liquid flow communication with said top portion of said conduit;

means for bubbling said vapor upwardly through said lift tube in response to solar heating of said solar heat collector for producing a force for lifting said cooled liquid from said heat exchanger to an elevation above said collector;

condenser means for receiving said cooled liquid after it has been lifted by said force and for condensing said vapor; and

conducting means for conducting said liquid from said condenser means to said collector.

4,270,522

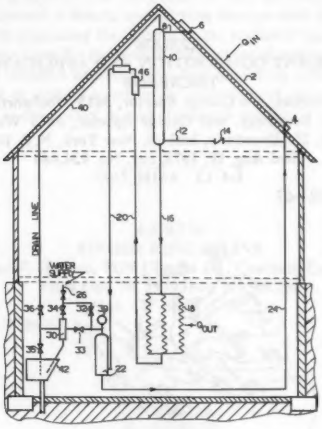
SOLAR HEAT COLLECTION AND TRANSFER SYSTEM

Leonard B. Vandenberg, 710 Sanders Ave., Scotia, N.Y. 12302

Filed Oct. 19, 1978, Ser. No. 953,130

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—434 **2 Claims**



1. A system for collecting and transferring heat in a fluid heat transfer medium from a heat source to a remote point of heat discharge, including:

a solar energy collector to add heat to said heat transfer medium, said collector including front and back panels defining a cavity therebetween, an absorber sheet disposed in said cavity and defining a plurality of flow channels for said heat transfer medium, said absorber sheet being of an elastomeric material so as to be deformable under external pressure on said panels to enhance the separation of said flow channels, and inlet and outlet fluid passages for the flow of said heat transfer medium into and out of said collector,

an accumulator to hold a quantity of said heat transfer medium and including a hot fluid inlet passage and a cold fluid outlet passage,

said collector and said accumulator being operatively connected to form a continuous heat accumulation loop for natural circulation of said heat transfer medium from said collector to said accumulator and from said accumulator to said collector,

heat discharge means to discharge heat from said heat transfer medium, said discharge means defining a passage for the flow of said heat transfer medium therethrough and including a hot fluid inlet passage and a cold fluid outlet passage,

said collector, said accumulator, and said heat discharge means being operatively connected to form a continous heat transfer loop for circulation of said heat transfer medium from said collector successively to said accumulator, said heat discharge means, and back to said collector,

an injector pump operatively disposed in said heat transfer loop to circulate said heat transfer medium around said heat transfer loop against the gravitational tendency of said medium, said injector pump further operatively connected by a vapor line to said heat accumulation loop to extract motive vapor therefrom, and

pressure control means to establish the pressure within said system to bring the vaporization temperature of said heat transfer medium within the temperature range of said collector.

4,270,523

HEAT STORAGE APPARATUS AND HEAT EXCHANGER ELEMENT FOR USE THEREIN

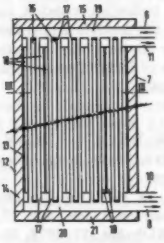
Joannes M. van Heel, Rotterdam, Netherlands, assignor to Stichting Bouwcentrum, Rotterdam, Netherlands

Filed Mar. 9, 1979, Ser. No. 19,461

Claims priority, application Netherlands, Mar. 23, 1978, 7803171

Int. Cl.³ F24J *3/02*; F28D *21/00*

U.S. Cl. 126—435 **27 Claims**



1. An apparatus for storing solar heat comprising:

at least one solar collector having means for passing a first heat transfer fluid therethrough;

a housing;

a plurality of heat exchange elements disposed within said housing, each of said heat exchange elements comprising a heat storage medium disposed centrally therein and occupying at least a portion of said housing;

means for circulating said first heat transfer fluid from said solar collector through said heat exchange elements in heat exchange relationship with said heat storage medium;

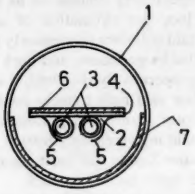
means for returning said first heat transfer fluid from each of said heat exchange elements to said solar collector; and

means for passing a second heat transfer fluid through each of said heat exchange elements in heat exchange relationship with said storage medium and for thereafter discharging said second heat transfer fluid from said apparatus, said first and second heat transfer fluids being isolated from each other.

4,270,524
SOLAR COLLECTOR

Emil Bächli, Hauptstrasse 156, 5403 Endingen, Switzerland

Filed Aug. 31, 1978, Ser. No. 938,710
Claims priority, application Switzerland, Sep. 24, 1977, 011694/77
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—443 4 Claims

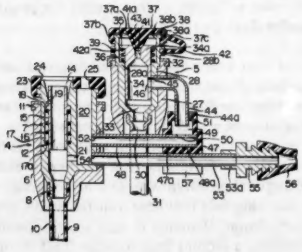


1. A solar collector comprising:
a plurality of transparent, hollow cover tubes being arranged substantially parallel to each other and having at least partially evacuated insulating portions;
at least one absorber arranged substantially centrally within each of said cover tubes and spaced from side walls of each of said cover tubes so that no heat bridges are formed between the absorber and said side walls;
a reflection layer at least partially covering an inner surface of each of said cover tubes;
said absorber including:
at least one liquid-conducting conduit;
a holder member having a plate means for holding said liquid-conducting conduit;
a selective layer provided for said holder member; and
a collecting conduit which has an at least partially evacuated portion that insulates a collecting pipe and which has at least partially evacuated infeed portions that operatively extend from said collecting conduit to each individual cover tube so that the insulating portions of said plurality of cover tubes are continuously interconnected with the insulating portions of said collecting conduit.

4,270,525
SUCTION CONTROL DEVICE FOR AN ENDOSCOPE

Hiroyuki Furihata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,678
Claims priority, application Japan, Apr. 17, 1978, 53-44161; Apr. 17, 1978, 53-50500[U]; Apr. 17, 1978, 53-50501[U]
Int. Cl.[3] A61B 1/00
U.S. Cl. 128—4 10 Claims

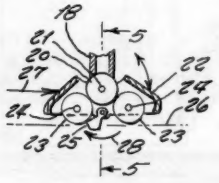


1. In an elongated endoscope having two ends and two channels extending through the endoscope, each of seid channels having two ends, a suction control device communicating with one of said channels and for communication with a suction device disposed externally of the endoscope, said suction control device comprising:
an adaptor comprising an adaptor body provided on one end of the endoscope, a cylindrical communication chamber formed in the adaptor body and having two ends, one end of said chamber communicating with one end of one of said channels and the other end being open to the atmosphere, a hollow cylindrical slider slidable axially in the communication chamber, an urging means disposed in the communicating chamber for urging the slider toward the other end of the communication chamber, and a lid, said lid having means for pushing the slider toward said one end of the communication chamber when the lid covers the other end of the communication chamber;
air conducting means provided on said one end of the endoscope and including an air chamber communicating with the atmosphere;
communication means disposed between the air conducting means and the communication chamber for allowing the air chamber to communicate with said one end of the communication chamber when the lid covers the other end of the communication chamber and pushes the slider toward said one end of the communication chamber; and
a suction pipe disposed between the air conducting means and the suction device for allowing the air chamber to communicate with the suction device.

4,270,526
LINIMENT COMPOSITION AND APPLICATOR THEREFOR

Juan C. Morales, c/o George Spector, 3615 Woolworth Building, 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, both of, New York, N.Y. 10007

Filed Aug. 18, 1978, Ser. No. 934,840
Int. Cl.[3] A61H 7/00
U.S. Cl. 128—67 1 Claim



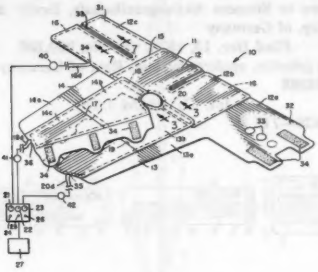
1. Body treatment apparatus comprising in combination a liniment and an applicator for applying said liniment, said applicator including a pair of rollers wetted with said liniment for rolling across a persons skin and a massaging bar pivotally mounted between said rollers that exerts opposite sideward pressure against said skin as said applicator travels reciprocally back and forth including a container for said liniment securable to said applicator cooperating with said rollers to distribute liniment on said rollers wherein the ingredients forming said liniment are contained in separate bottles of a kit that includes a graduated bottle into which said ingredients are mixed, a funnel for filling a neck of said graduated bottle, wherein said bottle is said container wherein said applicator includes a spout for affixing to said bottle neck, a rotatable roller at an end of said spout engaging said pair of rollers which are supported on a pivotable hood supported on said spout, said massaging bar being supported on said hood, and including a pair of faces each having angular extending ribs in different directions.

4,270,527

INFLATABLE TROUSER FOR MEDICAL USE

John R. Peters, Chicago, and Warren G. Armstrong, Northbrook, both of Ill., assignors to Armstrong Industries, Inc., Northbrook, Ill.

Filed Aug. 9, 1979, Ser. No. 65,094
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—87 R 16 Claims



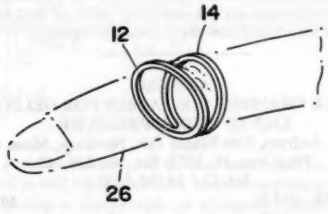
1. An inflatable trouser for medical use, comprising a panel of flexible material having an abdominal section and a pair of leg sections, each of said sections having double walls defining a pocket therein, and an inflatable bladder disposed in each of said pockets, wherein the improvement comprises said pockets of said leg sections and the pocket of said abdominal section being disposed in limited overlapping relation with portions of said walls separating the interior of the pocket of said abdominal section from the interiors of the pockets of said leg sections, and said bladders within said pockets of said leg sections being disposed in limited overlapping relation with respect to the bladder in the pocket of said abdominal section.

4,270,528

FINGER RING SPLINT

Catherine F. Hanson, 3199 Claudia Dr., Concord, Calif. 94519

Filed Oct. 29, 1979, Ser. No. 89,254
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—87 A 6 Claims



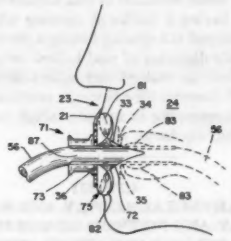
1. A finger splint for preventing hyperextension of a finger joint while permitting free flexion of the finger joint, comprising a first ring member adapted to encircle the finger and disposed rearwardly of the finger joint, said first ring member being generally circular and adapted to be closely fitted about the finger, a second ring member adapted to encircle the finger forwardly of the finger joint and directly adjacent thereto, said ring members extending from a common apex, the portion of said second ring member distal from said apex adapted to impinge on the forward portion of said joint during full extension thereof to prevent hyperextension thereof.

4,270,529

ENDOTRACHEAL TUBE STABILIZER

Rudolph Muto, 24 Williams St., Andover, Mass. 01801

Continuation-in-part of Ser. No. 23,652, Mar. 26, 1979. This application Aug. 13, 1979, Ser. No. 66,029
Int. Cl.[3] A61M 15/00
U.S. Cl. 128—200.26 4 Claims



1. An endotracheal tube stabilizer for retention of a tube of compressible material having a predetermined, substantially uniform, outside diameter, said stabilizer comprising:

a mouthpiece having an elongated, straight generally tubular, body with an axial bore of predetermined diameter for receiving said tube, said mouthpiece having;

an integral, annular fixation flange in an intermediate portion of the length thereof, projecting outwardly therearound, an elongated bite block portion in rear of said flange and an elongated guide portion in front of said flange;

said mouthpiece having a laterally open slot extending the full length thereof from said bit block portion through said flange and intermediate portion and to said guide portion and flaring from an outer opening in said flange of greater dimension than the outer diameter of said tube to an inner opening, at said bore, of less dimension than the outer diameter of said tube; and

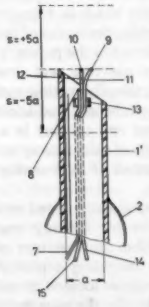
tape holes in said fixation flange and tape in said holes fixing said mouthpiece in the mouth of a patient.

4,270,530

TRACHEAL TUBE

Marcel Baum, Vienna, Austria; Horst Frankenberger, Bad Schwartau, and Erik Schwanbom, LUML,u/ beck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 86,949
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847681
Int. Cl.[3] A61M 25/02
U.S. Cl. 128—204.25 7 Claims



1. A tracheal tube comprising, a hollow tubular body having

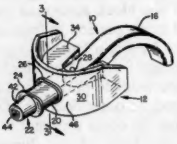
a bore with an open tube end, an inflatable sealing cuff disposed around said tubular body adjacent said tube end, at least one small diameter tube adjacent the wall of said hollow tubular body having a nozzle portion terminating in a discharge jet centrally within the bore adjacent said open tube end for use in jet ventilation at high frequencies above 600 cycles per minute, said small diameter tube having a diameter of between 0.4 to 0.05 times the inside diameter of said hollow tubular body, said discharge jet having a discharge opening which is fixed relative to the open end at a spacing having a dimension within five times the inside diameter of said hollow tubular body, and a test line adjacent the wall of said hollow tubular body alongside said small diameter tube having a portion extending out of the wall and terminating in an open mouth in the bore spaced upstream of said discharge jet.

4,270,531

OROPHARYNGEAL AIRWAY AND BITE BLOCK ASSEMBLY AND METHOD OF USE FOR CLOSED PULMONARY VENTILATION

Paul H. Blachly, deceased, late of Portland, Oreg., and By Beverly J. Blachly, executor, 3348 NW. Skyline Blvd., Portland, Oreg. 97229

Filed Dec. 11, 1978, Ser. No. 967,902
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.14 **2 Claims**



1. A combination oropharyngeal airway and bite block assembly for use in providing closed pulmonary ventilation of a patient, comprising:

(a) an oropharyngeal airway tube having means defining a curved tubular posterior portion, for introduction through the mouth into the upper throat of a patient, a tubular anterior portion connected to said posterior portion and tubular connector means connected to said anterior portion for detachably and sealingly connecting said airway tube to a closed ventilation apparatus;

(b) a U-shaped bite block in engagement with said airway tube for preventing occlusion of the airway tube when the assembly is inserted in the patient's mouth, said bite block having a central aperture, said airway tube and said aperture having frictionally mating surface means for permitting said airway tube and said aperture to frictionally and sealingly engage one another in a plurality of positions along the length of said airway tube, thereby permitting slidable adjustment of said airway tube with respect to said bite block;

(c) positioning stop means located on said anterior portion of said airway tube for limiting rearward motion of said airway tube within said aperture of said bite block; and

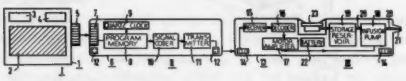
(d) detent means including a plurality of generally hemispherical protrusions located on said posterior portion of said airway tube, the distance between said forward stop means and detent means being greater than the thickness of said bite block from front to back along said central aperture, whereby said detent means limits the forward movement of said airway tube within said aperture of said bite block.

4,270,532

DEVICE FOR THE PRE-PROGRAMMABLE INFUSION OF LIQUIDS

Manfred Franetzki, Uttenreuth; Klaus Gagneur, Bubenreuth, and Karl Prestele, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,200
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758368
Int. Cl.³ A61M *5/20*
U.S. Cl. 128—213 R **1 Claim**



1. In a system for the pre-programmable infusion of liquids into a patient's body, the system has a microdosing unit adapted to controllably infuse a liquid into the patient's body based on signals received from a patient carriable control unit, the control unit is contained in a housing which includes a memory for storing a dosage control program to control the infusion of liquid by the microdosing unit, an improvement comprising:

a socket part of a two-part means for connection affixed to the housing of the control unit,

data transmission means within the control unit adapted to receive a dosage control program from said socket part of said two-part means for connection and write said program into said memory;

programming means separate from the control unit, said programming means including:

a housing,

a plug part of said two-part means for connection affixed to said housing such that a region of said housing partly surrounds said plug part,

self-containing manually setable means for establishing another dosage control program which extends over a twenty-four hour period, and

means for transmitting said another established dosage control program to said plug part of said two-part means for connection and then to said socket on the control unit only when said socket and plug parts of said two-part means for connection are connected together.

4,270,533

MULTIPLE CHAMBER CONTAINER FOR DELIVERING LIQUID UNDER PRESSURE

Joseph M. Andreas, Two Maple Ter., Newbury, Mass. 01950

Filed Aug. 16, 1977, Ser. No. 825,143
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 F **10 Claims**

1. A pressure infusion chamber for administering parenteral liquids into a patient comprising:

A. first and second outer wall members of a flexible material,

B. a first intermediate, flexible wall member interposed between said first and second outer wall members in a peripherally sealed relationship,

C. a second intermediate, flexible wall member interposed between said first intermediate member and one of said outer wall members,

D. said first and second intermediate wall members dividing said container into three separate chambers which include a fluid pressure chamber, a parenteral liquid infusion chamber and an intermediate chamber separating the aforesaid chambers,

E. first and second port means connected to said fluid pressure chamber and said parenteral fluid chamber respectively for providing fluid passages into said chambers, and

F. venting port means communicating with said intermediate chamber formed by said intermediate wall members whereby when said fluid pressure chamber is expanded

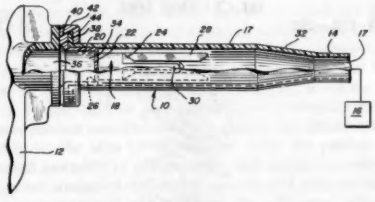
under pressure, said parenteral liquid chamber is compressed thereby infusing parenteral liquid to a patient through said liquid port means, said vented intermediate chamber serving to prevent introduction of air or fluid into the patient in the event of rupture of said pressure chamber.

4,270,534

FRANGIBLE VALVE ASSEMBLY FOR BLOOD BAGS AND THE LIKE

Elvis E. Adams, Downers Grove, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 8, 1979, Ser. No. 64,952
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 D **4 Claims**



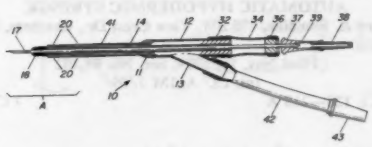
1. In a valve assembly, a flexible tube, and valve means positioned in said tube, said valve means comprising: a tubular portion having a closed end, an elongated, generally rigid member carried on the exterior of said closed end and positioned within said flexible tube, and frangible means to permit the opening of said tubular portion by rupture of an area of weakness by manual manipulation of the elongated member from outside of the flexible tube, the improvement comprising, in combination, said flexible tube defining an inner end flange, said tubular portion of the valve means defining, at its end opposite to said closed end, a retention flange, said retention flange including a cylindrical wall positioned generally coaxially with said tube and surrounding the periphery of said inner end flange, said cylindrical wall carrying an annular closure flange enclosing and retaining said inner end flange between said closure flange and retention flange.

4,270,535

DOUBLE LUMEN CATHETERS

Benford A. Bogue, Littleton, Colo., and Stephan A. Gagneux, Muttenz, Switzerland, assignors to Hospal Medical Corp., Littleton, Colo.

Filed Oct. 18, 1979, Ser. No. 86,043
Int. Cl.³ A61M 5/14
U.S. Cl. 128—214.4 **7 Claims**



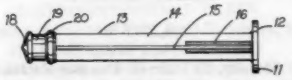
1. In a double lumen single needle intraveneous catheter device having a hub means including first and second spaced apart fluid conduit means, an inner lumen in fluid communication at its proximal end with the first conduit means, an outer lumen in fluid communication at its proximal end with the first conduit means, an outer lumen in fluid communication at its proximal end with the second conduit means the lumens being in concentric relationship to one another, at least one aperature being provided in the wall of the outer lumen at its distal end region, the improvement which comprises a substantially frustroconical tip element of plastics material having a bore defining an extension of the inner lumen and having an annular base section providing an annular seal between the outer surface of the distal end region and the inner lumen and the adjacent interior surface of the distal end region of the outer lumen, wherein the distal end of the outer lumen has an inwardly directed annular flange which mates with a corresponding recess in the base portion of the tip to secure the tip in fluid tight relationship with the inner and outer lumens, whereby an annular passage is defined between the inside surface of the outer lumen and the outside surface of the inner lumen which communications between the aperature and the second conduit means and which is sealed from the passage provided by the bore of the tip element and the inner lumen which communicates with the first conduit means, and whereby the substantially frustroconical surface of the tip element provides for ease of entry of the catheter into a blood vessel or fistula.

4,270,536

DISPOSABLE SYRINGE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Oct. 1, 1979, Ser. No. 80,562
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N **6 Claims**



1. A hypodermic syringe comprising in combination:

a syringe cylinder which is open at one end and closed at the other,

a hypodermic needle secured to the closed end of the cylinder and communicating with its interior for receiving a liquid forced through the cylinder,

piston means, including an elongated shank for supporting said piston means, and slidably supported within said cylinder,

the end of said shank opposite said piston means having an increased diameter portion permitting it to be engaged by the thumb of a hand of a person utilizing said syringe,

an elongated cavity formed in the central portion of said increased diameter portion and extending into said shank said elongated cavity being of sufficient depth to receive

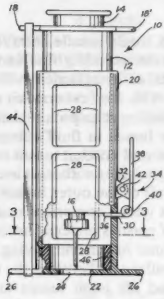
substantially the entire portion of said hypodermic needle protruding from the end of the syringe cylinder and of such a diameter as to retain said needle against lateral displacement therein of a degree which would prevent the breakage of said needle so as to permit the bending and breaking of said needle while disposed within said cavity.

4,270,537

AUTOMATIC HYPODERMIC SYRINGE

Richard A. Romaine, 475 SW. View Crest Dr., Gresham, Oreg. 97030

Filed Nov. 19, 1979, Ser. No. 95,402
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 A **7 Claims**



1. An automatic hypodermic syringe assembly comprising, in combination:

(a) a syringe, comprising a barrel, a reciprocating plunger within the barrel, and a needle attached to the bottom of the barrel; and

(b) an insertion mounting therefor, the mounting comprising:

(1) a hollow cylinder, open at the top, dimensioned to receive the syringe barrel in longitudinal sliding relationship, and having a base at the bottom with a hole therein dimensioned to pass the needle,

(2) trip means engaging the cylinder and the syringe, operable to releasably support the syringe barrel within the cylinder,

(3) resilient drive means interconnecting the syringe barrel and the cylinder, and operable to advance the barrel in the cylinder upon release of the trip means, thereby extending the needle, and

(4) interchangeable penetration limiting means, operable to predetermine the maximum extension of the needle.

4,270,538

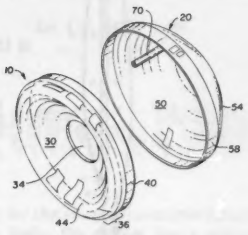
BREAST SHIELD

Michael K. Murphy, 21 Hillcrest Dr., San Rafael, Calif. 94901

Continuation of Ser. No. 847,281, Oct. 31, 1977, abandoned. This application Sep. 6, 1979, Ser. No. 72,954
Int. Cl.³ A61M *1/08*; A41C *3/00*
U.S. Cl. 128—202 **2 Claims**

1. In a generally circular breast shield for nursing women, said breast shield including a substantially round base having a first concave breast-confronting surface, a second convex chamber-defining surface, and a first peripheral lip surrounding said convex chamber-defining surface, said base having a centrally located nipple-receiving aperture communicating between said first breast-confronting surface and said second chamber-defining surface, said base having a cylindrical symmetry axis that is generally horizontal when said breast shield is in use on a non-reclining woman, said breast shield also including a substantially round cover having a first concave chamber defining surface, a second peripheral lip surrounding said first concave chamber-defining surface, and a second outer convex surface, said cover having a non-centrally located orifice communicating between said first chamber defining surface and said outer surface, said base and said cover being connectable by engagement of said peripheral lips to provide an inner milk receiving chamber, said breast shield in use on a non-reclining woman being disposed generally vertically with said orifice at an elevation above said aperture, the improvement comprising:

a straight tube sealingly mounted to said cover and surrounding said orifice, said tube extending away from said



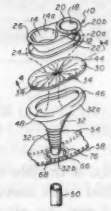
first concave chamber defining surface of said cover into said chamber in a direction generally parallel to said cylindrical symmetry axis said tube having sufficient length to prevent milk accumulated within said chamber from flowing through said orifice when said breast shield is tilted horizontally so that said milk surrounds said orifice, said orifice being positioned sufficiently close to the periphery of said chamber to allow a major portion of said milk to flow through said tube and said orifice when said breast shield is vertically disposed with said orifice at an elevation below said aperture.

4,270,539

URINE COLLECTION APPARATUS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Roger B. Michaud, League City, Tex.

Filed Apr. 27, 1979, Ser. No. 34,531
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—295 **34 Claims**

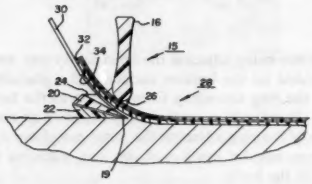


1. A urine collection device for human females comprising:

an interface body having an interface surface for engagement with the user's body, said interface body comprising a forward portion defining a urine-receiving bore having an inlet in said interface surface adapted to be disposed in surrounding relation to the urethral opening of the user, said interface body further comprising a rear portion integrally adjoining said forward portion and having a vaginal seal including an elevated lip portion on said interface surface for sealing the vagina of the user from communication with said urine-receiving bore;

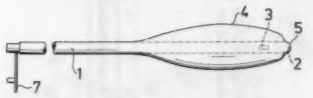
and an absorbent pad removably supported on said interface body and extending laterally therefrom.

4,270,540
LAMINATED STRIP FOR SKIN THICKNESS CONTROL FOR USE WITH DERMATOME APPARATUS AND METHOD OF USING THE SAME
Boris Schwartz, 625 Lafayette Ave., Hawthorne, N.J. 07506
Filed Apr. 16, 1980, Ser. No. 140,827
Int. Cl.³ A61B *17/322*
U.S. Cl. 128—305.5 **10 Claims**



10. A dermatome apparatus which utilizes an improved plastic strip and adapted for the removal of a selected area of skin of a determined thickness from a patient, this dermatome having a blade holder and means for moving the holder in and with a reciprocating motion, said blade having a sharpened edge and carried in and by said holder and movable with the holder as it is moved, said reciprocating motion being parallel to said sharpened blade and with said dermatome having a guideway providing a selected opening in the blade holder and with the sharpened edge of the blade projecting toward the guideway and establishing with the holder a determined spaced opening, said holder providing a guideway portion and defining a side of the guideway into which said cutting edge of the blade enters, the cutting edge of the blade being substantially parallel to the guideway, and in association with the dermatome, an improved plastic strip includes: (a) a tongue end which is tapered to provide an easy entering portion into and through said guideway in the blade holder, the strip having a midportion of plastic and of determined width, length and thickness, this width of the midportion being substantially less than the length of the guideway in the blade holder as that reciprocation of the blade holder can occur while the plastic strip is in the guideway; (b) an adhesive surface applied to this midportion of the plastic strip and on one side thereof to provide an adhesive attraction to that portion of skin to be removed by a cutting action of the blade; (c) a release sheet applied to the surface and providing a protection for said adhesive surface until removed for placing the adhesive face of the strip on the skin to be removed from the patient; (d) a laminated assembly of plastic strip, said midportion strip and the layered laminated strips so structured and adhered that the plastic strip exposed and opposite the adhesive surface for retaining the skin is smooth and provides a sliding surface over and on which the curved portion of the holder slides, and (e) means for engaging and manipulating the removal of a selected laminate to provide a determined thickness of plastic strip so that the cutting of and removal of the outer skin may be accomplished by a reciprocating movement of the blade holder and blade after threading the tongue of the plastic strip through the guideway of the blade holder and after pressing the adhesively coated portion of the strip to the skin of the patient with the holder positioned with the blade edge toward the adhered plastic strip on the skin and with the adhered skin lifted whereby a cutting motion of the blade allows the plastic strip and thickness of adhered, removed skin to be pulled through the guideway, the combination of the laminated plastic strip and removed skin being of a thickness equal to the spaced opening in the guideway.

4,270,541
INSTRUMENT FOR INDUCTION OF LABOR
Tadao Okamoto; Eisuke Obata, both of Tokyo, and Yutaka Enomoto, Kawaguchi, all of Japan, assignors to Fuji Latex Co., Ltd., Tokyo, Japan
Filed May 14, 1979, Ser. No. 38,908
Int. Cl.³ A61M *29/02*
U.S. Cl. 128—344 **4 Claims**

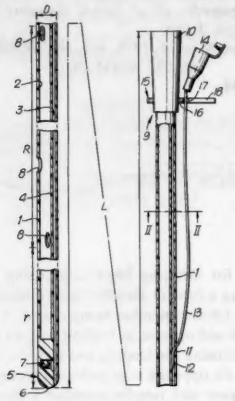


1. A method for inducing labor comprising providing an instrument having a tubular member with a leading end and a trailing end, said tubular member being closed at the extremity of its leading end and open at its trailing end, an elongate fluid inflatable bag enclosing the leading end portion of said tubular member having its opposite end portions secured in a fluid-proof manner upon said tubular member spacedly from the trailing end thereof, said bag having a side wall portion tapering inwardly at the opposite ends thereof and with the maximum dimension of said bag being lengthwise, said tubular member being open at its trailing end and with there being means for effecting fluid flow between the interior of said tubular member and the interior of said inflatable bag, inserting the bag-carrying leading end portion of said instrument through the cervical canal of the patient and thence into the uterus for disposition between the uterine wall and the amniotic membrane then causing the introduction of a predetermined quantity of fluid into said tubular member and thence into said bag for inflation of the latter, permitting the bag in inflated state to remain within the uterus for a predetermined period of time to produce dilatation of the cervical orifice, then permitting the instrument to drop from the uterus, through the cervical canal and into the vagina for removal for permitting completion of dilatation of the cervical orifice.

4,270,542
GASTRO-INTESTINAL TUBES
Peter F. Plumley, 8 Wealden Way, Bexhill, Sussex, England
Filed Oct. 2, 1979, Ser. No. 81,242
Claims priority, application United Kingdom, Oct. 9, 1978, 39848/78
Int. Cl.³ A61M *27/00*
U.S. Cl. 128—350 R **9 Claims**

1. A gastro-intestinal tube having: a first bore for enabling fluid to be removed from the stomach and oesophagus of a patient, said first bore extending to, and being closed at, one end of said tube; a multiplicity of apertures in the wall of said tube through which said first bore opens, said apertures being spaced apart from one another over a region along the length of said tube, the first aperture in said region being spaced from said one end of said tube by a first distance of at least 10 cm and said region extending for a second distance substantially equal to said first distance; and a second bore for enabling fluid to be supplied to the duodenum of the patient, said second bore extending to, and opening at, the said one end of said tube such

that when said tube is located with its said one end in the region of the duodenum some of said apertures are located in



a lower part of the oesophagus and others of said apertures are located in an upper part of the stomach.

4,270,543

SILVER-SILVER CHLORIDE ELECTRODE

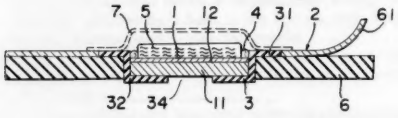
Katsuhiko Tabuchi; Toshiaki Kato, and Kenryo Namba, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1979, Ser. No. 82,660

Claims priority, application Japan, Oct. 6, 1978, 53-122706; Nov. 17, 1978, 53-140954

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—639 **6 Claims**



1. A non-polarizable skin electrode for detecting electrical signals generated by biopotential phenomena, which comprises an electrode layer comprising silver grains, silver chloride grains and particles of glass frit bonded on their surfaces to form a matrix, the grains being interspersed throughout the matrix, the electrode layer being coated upon a substrate.

4,270,544

MEDICAL ELECTRODE HAVING IMPROVED ADHERENCE CHARACTERISTICS

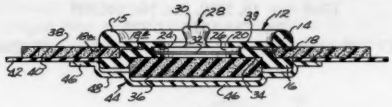
Sheldon J. Gilden, Sharon, and Robert H. Robichaud, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Attleboro, Mass.

Filed May 21, 1979, Ser. No. 40,839

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—640 **8 Claims**

1. A medical electrode unit comprising a dielectric body having a cavity therein which is open at one end, a conductive electrode element mounted on the body, the electrode element having a surface disposed in the cavity, the electrode element having means for permitting electrical connection to be made to the electrode element, a resilient, foam pad having pores extending therethrough secured to the body within the cavity, the foam pad having a surface extending adjacent the open cavity end, a selected quantity of electrolyte gel disposed in the cavity and saturating the foam pad and means for securing the dielectric body to a patient including a flexible ring secured around the periphery of the body in surrounding relation to the open cavity end, the ring having a top and bottom surface, the



bottom surface being adjacent the open cavity end, an adhesive layer provided on the bottom surface and a plurality of slits formed in the ring extending from the top to the bottom surface, each slit extending continuously between an outer annular portion of the ring adjacent the outer periphery of the ring and an inner annular portion of the ring adjacent the outer periphery of the body.

4,270,545

APPARATUS FOR EXAMINING BIOLOGICAL BODIES WITH ELECTROMAGNETIC FIELDS

Hans Rodler, Pehamweg 3-5, Graz-Neuhart, Austria

Continuation-in-part of Ser. No. 787,974, Apr. 15, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 940,990

Claims priority, application Austria, Apr. 20, 1976, 2874/76

Int. Cl.³ A61B *5/05*

U.S. Cl. 128—653 **6 Claims**

1. Apparatus for measuring physiological processes in a biological body, comprising, in combination, transmitting means for generating a primary electromagnetic field adapted to induce currents in said body, said currents creating a secondary field, said transmitting means comprising a plurality of spools coupled by a ferrite core forming a hollow body, and primary energizing means for energizing said transmitting spools; and pick-up means coupled to said secondary field for furnishing measurement signals indicative of the value of a predetermined characteristic of said secondary field, but substantially indepedent of said primary field, said pick-up means comprising display means for furnishing a display of said measurement signals; wherein said pick-up means comprises a pick-up spool located within said hollow body; and further comprising a compensation spool coupled to said pick-up spool and surrounding said pick-up spool, and phase shift means and amplitude control means for connecting said compensation to said primary energizing means.

4,270,546

DEVICE FOR ULTRASONIC EXAMINATION OF BIOLOGICAL STRUCTURES

Jean R. Perilhou, Bourg-la-Reine, and Roger H. Coursant, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,768

Claims priority, application France, Dec. 5, 1977, 77 36507

Int. Cl.³ A61B *10/00*

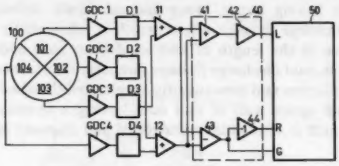
U.S. Cl. 128—660 **2 Claims**

1. A device for examining biological structures by means of ultrasonic waves which are reflected by those structures, comprising:

an electroacoustic converter, said converter comprising at least four transducers, at least some of said transducers being grouped into pairs, each pair consisting of transducers which are diametrically situated with respect to the center of the converter;

a plurality of adders, each adder being connected to sum output signals from one pair of transducers;

arithmetic circuit means, connected to receive output signals from said adders, which function to form a first signal representative of the sum of the signals produced by all of the transducers pair and a number of second signals which are representative of the difference between the signals generated by different transducer pairs or groups of pairs; and



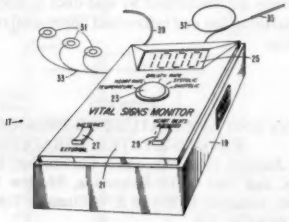
display means connected to receive the first and second signals from the arithmetic circuit and to display images such that the first signal determines the brightness of points in the image and the second signals determine color information at points in the image, whereby the image is a characterization on tissue types in the biological structures.

4,270,547

VITAL SIGNS MONITORING SYSTEM

Dale A. Steffen, Aurora; Ronald E. Sturm, and George A. Rinard, both of Denver, all of Colo., assignors to University Patents, Inc., Norwalk, Conn.

Filed Oct. 3, 1978, Ser. No. 948,139
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—671 **37 Claims**



1. A system for monitoring vital physiological signs, said system comprising:

a plurality of sensing means for sensing predetermined vital physiological signs and responsive thereto providing output signals indicative thereof;

a plurality of signal processing means connected with different ones of said sensing means to receive said output signals therefrom, each of said processing means including data output circuitry means having tri-state output latch register means for providing BCD data output on four data lines; and

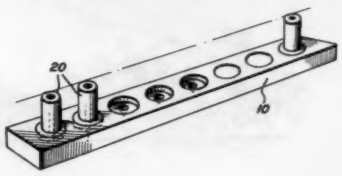
indicating means connected to receive said BCD data output on said four data lines and indicating said predetermined vital physiological signs sensed by said sensing means.

4,270,548

ALLERGY TESTING METHOD

Louis G. Brennan, Stockton, Calif., assignor to Aller-Screen, Inc., Stockton, Calif.

Division of Ser. No. 939,442, Sep. 5, 1979, Pat. No. 4,205,689.
This application Dec. 11, 1979, Ser. No. 102,306
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—743 **16 Claims**



1. A skin testing method for in vivo intracutaneous use which comprises the steps of:

providing applicator means comprising a plurality of individual injection units, each of said injection units comprising a handle portion, a hilt portion and a scarifier portion comprising a skin piercing intradermal point and having means for carrying testing substances, each of said units carrying biological or chemical substances for skin testing, at least one injection unit of said applicator means carrying a plurality of different antigens in admixture;

depositing said substances intracutaneously by piercing the skin with each unit to predetermined depth; and

observing the pierced skin for response to said substances and dermographia.

4,270,549

METHOD FOR IMPLANTING CARDIAC ELECTRODES

Marlin S. Heilman, Gibsonia, Pa., assignor to Mieczyslaw Mirowski, Owings Mills, Md.

Filed Apr. 30, 1979, Ser. No. 34,733
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **10 Claims**

1. A method of implanting a cardioverting electrode proximate to the human heart,

making a skin incision in the upper abdominal wall,

separating tissue planes by means of a hand-held instrument,

creating a tunnel inside the thorax and outside the pleural cavity, through the soft tissues surrounding the heart, said tunnel originating at the skin incision and terminating at the heart,

inserting at least one electrode into said skin incision,

progressively advancing said at least one electrode through said tunnel in the direction of the heart, and

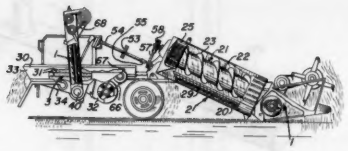
locating said electrode proximate the exterior surface of the heart.

4,270,550

COMBINE HARVESTER

Josè T. daSilva, 1354 D. Luiz do Amaral Moushinho St., Ribeirao Preto, Sao Paulo, Brazil

Continuation-in-part of Ser. No. 839,612, Oct. 5, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 15,606
Claims priority, application Brazil, Oct. 5, 1976, 7606713
Int. Cl.[3] A01F *12/18*
U.S. Cl. 130—27 T **10 Claims**



1. A mobile combine harvester comprising:

a reaping assembly comprising a platform extending horizontally transversely of the direction of movement of said harvester, a cutter bar at the forward edge of said platform, a reel above said cutter bar and rotatable to deliver grain cut by said cutter bar to said platform, and a conveyor at the rear of said platform for conveying cut grain laterally to a delivery point,

a thrashing assembly receiving cut grain directly from said delivery point of said reaping assembly and comprising a cylindrical casing which is inclined upwardly and rearwardly from said reaping assembly with a forward end connected with said reaping assembly and a rear end elevated, a cylindrical screen in said casing, a rotor rotatable in said cylindrical screen and comprising a cylindrical portion and a continuous vane extending helically around said cylindrical portion and carrying thrashing projections at its periphery, a first radial fan coaxial with said rotor at its rear end for drawing air rearwardly through said casing and discharging it with straw from which grain has been separated at the rear of said casing, a longitudinally extending grain-collecting trough portion in said casing below said cylindrical screen to receive grain, and a screw conveyor in said trough portion for moving said grain rearwardly and upwardly to the rear end of said thrashing assembly, said casing providing a discharge for said fan,

a cleaning assembly receiving said grain directly from said thrashing assembly comprising a reciprocating screen, a second radial fan for blowing air up through said screen to carry off chaff or other light waste and a collecting pan below said reciprocation screen, and

a grain handling assembly comprising a grain elevator and transport means for conveying grain from said collecting pan to the lower end of said grain elevator.

4,270,551

AIR BAFFLE FOR HARVESTER ACCELERATOR ROLLS

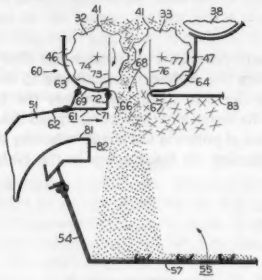
David K. Johnston, Blue Springs, Mo., and Donald A. Suderman, Manhattan, Kans., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 22, 1979, Ser. No. 87,162
Int. Cl.[3] A01D *41/12*
U.S. Cl. 130—27 H **1 Claim**

1. A harvester having a threshing area, a cleaning area of predetermined width disposed below the threshing area, an accelerator precleaner including a pair of equal diameter side-by-side accelerator rolls driven in opposite directions at the same speed, said rollers having axially extending teeth and being disposed beneath the threshing area and above and substantially coextensive with the width of the cleaning area, means for driving the rolls whereby threshed material is accelerated downwardly to the cleaning area and a source of pressurized air, characterized by

a pair of cylindrical walls in said precleaner complimentary to the horizontally outer peripheries of said accelerator rolls and curving downwardly and thence horizontally toward one another terminating in edges defining a downwardly open discharge slot, said edges lying in parallel, vertical transverse planes spaced horizontally inwardly of the axes of said rolls, the width of said slot being greater than the radius of said rolls and less than three-fourths the diameter of said rolls,

a cleaning air duct connected to said source of pressurized air having upper, lower and side walls defining an air discharge passage whose width is substantially coextensive to the length of said accelerator rolls and cleaning area, said discharge passage directing a horizontal layer of air across said downwardly accelerated threshed material, said upper wall of said duct having a terminal portion which is substantially horizontal and disposed below said



rolls a vertical distance at least as great as one-half the radius of said rolls,

a vertical wall lying in one of said vertical transverse planes and interconnecting one of said edges of said slot and said upper wall of said duct, said one vertical transverse plane being spaced horizontally from the axis of one of said rolls in the direction toward said other roll a distance at least one-third the radius of said rolls, and

a generally horizontal upper wall defining in part said cleaning area and terminating at the other of said edges, said horizontal upper wall of said cleaning area being disposed at an elevation above said upper wall of said air duct, whereby air discharged by said duct is directed in a horizontal direction and below said upper wall of said cleaning section.

4,270,552

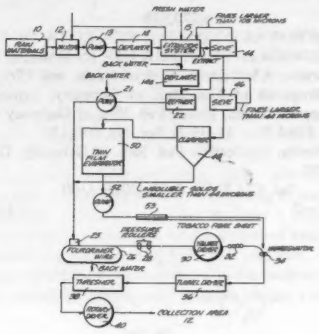
PROCESS AND APPARATUS FOR PRODUCING PAPER RECONSTITUTED TOBACCO

John M. Jenkins, High Wycombe; Christopher T. Pedder, Tottington, and Neil G. D. Robertson, Marlow Bottom, all of England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 839,309, Oct. 4, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 58,971
Int. Cl.[3] A24B *3/14, 3/18, 15/24*
U.S. Cl. 131—290 **24 Claims**

1. A process for producing reconstituted tobacco by a papermaking process comprising; mixing a predetermined amount of tobacco material with at least one of water and aqueous tobacco extract to wet the tobacco material, feeding the resulting slurry to at least one peg-mill deflaker in which the bundles of tobacco fibers are reduced to small fiber bundles, directing the slurry to an extraction stage, separating the water soluble and fibrous components of the slurry at the extraction stage, passing the fibrous material in the form of a slurry through a refining means to further separate the fiber bundles, diluting the fibrous material slurry and passing it to a papermaking ma-

chine, and processing the fibrous material in the papermaking machine to form a base sheet of reconstituted tobacco and



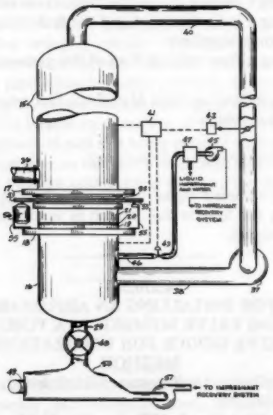
impregnating the sheet with a concentrate of the water soluble component separated in the extraction stage.

4,270,553

PROCESS AND APPARATUS FOR EXPANDING TOBACCO

Lucas J. Conrad, Winston-Salem, and Jackie L. White, Pfafftown, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 13, 1978, Ser. No. 960,416
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **47 Claims**



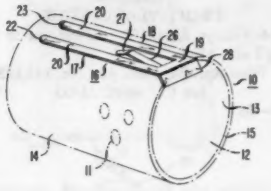
1. A process for expanding tobacco impregnated with an expansion agent which comprises introducing the impregnated tobacco into a fluidized bed of hot inert solid particles to effect rapid vaporization or expansion of said expansion agent with concomitant expansion of the tobacco, said particles having maximum and minimum dimensions in the range of 0.10 to 5 millimeters, and separating the expanded tobacco from the fluidized bed.

4,270,554

HAIR FASTENER CLIP FOR HAIR ROLLER

Philip T. Lazzaro, 54 Manning St., Edison, N.J. 08817

Filed Oct. 27, 1978, Ser. No. 955,156
Int. Cl.³ A45D *2/00*
U.S. Cl. 132—40 **10 Claims**



1. An arrangement for forming a curl in a head of hair comprising:

a hollow cylindrical hair roller **(10)** having a hollow interior **(12)** defined by an inner wall **(13)** and an exterior wall **(14)** defining a surface onto which hair is rolled, and

means for clamping the hair rolled on said exterior surface wall **(14)** onto said roller,

characterized in that

said clamping means **(16, 29)** comprises

a pair of spaced apart legs **(17, 18** and **31, 32)** each having a first end, a second end and a surface **(21, 40)** between said first and second ends for clamping said rolled hair on said exterior surface wall **(14),**

said pair of legs comprising interior facing surfaces **(17', 18')** extending between said first and second ends of said legs and having an increasing spacing between said facing surfaces **(17', 18')** at said second ends of said legs,

a member **(19,33)** joining said legs **(17, 18** and **31, 32)** together at the first ends thereof, and

another leg **(24, 38)** shorter in length than said pair of legs and extending downwardly from said pair of legs and in a plane therebetween for engaging said inner wall **(13)** of said hair roller **(10).**

4,270,555

MULTI-STAGE HAIR CURLER

Mildred C. Punte, 9028 Hines Rd., Baltimore, Md. 21234

Filed Apr. 15, 1980, Ser. No. 140,489
Int. Cl.³ A45D *2/00*
U.S. Cl. 132—40 **10 Claims**

1. A method for curling human hair comprising, inserting a retention means in a slotted holder so that the retention means extends approximately equally on both sides of said slotted holder, bending said retention means upward to form a "U" shaped configuration, placing the ends of a portion of said human hair between upstanding legs of said "U" shaped configuration of said retension means, rolling a length of said hair and said retention means around and upon said slotted holder, inserting the rolled hair on said slotted holder into a tube-like means to hold the rolled hair in place, the tube-like means being slotted to permit passage of the portion of the hair growing from the head, rolling an additional length of hair around said tube-like means, inserting the rolled hair on said tube-like

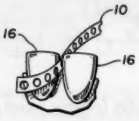
means into a second tube-like means in a manner similar to the foregoing and thereafter rolling an additional length of hair upon said second tube-like means, and securing the rolled hair in place and maintaining the assemblage together as a unit be external means affixed at each end of said slotted holder.

4,270,556

PROPHYLAXIS STRIP

Charles B. McAllister, Edina, Minn., assignor to Twelve West, Inc., Long Lake, Minn.

Filed Apr. 24, 1980, Ser. No. 143,185
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—89 **15 Claims**



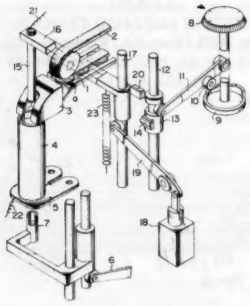
1. A prophylaxis strip for cleaning interproximal surfaces and contact areas between teeth, comprising: a length of thin, flexible, perforated strip, the material of which is softer than tooth enamel and hard enough to abrade plaque, calculus, stains and the like on teeth, the perforations of which are spacedly formed in the lateral surfaces of the strip, each perforation including a raised, peripheral scaling edge means on one of the lateral strip surfaces, the overall thickness of the strip being of a dimension which fits between the teeth.

4,270,557

INCORRECTNESS DETECTING DEVICE FOR DETECTING COIN PILING CONDITION IN PILING CYLINDER OF COIN PACKAGING MACHINE

Kenkichi Watanabe, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,307
Claims priority, application Japan, Jul. 18, 1978, 53/98659[U]
Int. Cl.³ G07D *9/06*
U.S. Cl. 133—8 D **3 Claims**



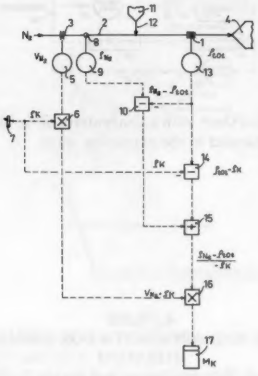
1. An incorrectness detecting device for detecting the coin piling condition in a piling cylinder, comprising: a sensor made coactive with a coin kind selecting dial for having its height varied in accordance with the height corresponding to a preset number of coins piled; a detecting element adapted to be brought downwardly into contact with the upper side of the uppermost one of the piled coins, when the preset number of coins are piled in said piling cylinder, for making an electric circuit through the piled coins; and a sensor element made coactive with said detecting element and corresponding to said sensor, whereby the coin piling condition is detected in response to both the signal, which is generated by the interaction between said sensor and said sensor element, and the signal which is generated by said electric circuit.

4,270,558

PROCESS FOR MONITORING THE FLOW OF FINE GRAINED SOLID FUEL FOR USE IN GASIFIERS

Manfred Förster; Adolf Linke, both of Essen, and Ulrich Geidies, Waltrop, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 970,124
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757032
Int. Cl.³ F17D *3/00*; G01F *1/00*
U.S. Cl. 137—2 **3 Claims**



1. A process for automatically monitoring a flow of fine-grained solid fuels and dust-like solid fuels which are suspended in a gaseous carrier medium through a conduit, comprising:

determining a specific weight ρ_K of the fuel;

determining a density ρ_{N2} of the gaseous carrier medium;

determining a total density ρ_{tot} of the fuel and gaseous carrier medium together;

determining a flow volume V_{N2} of the gaseous carrier medium;

computing a flowing mass M_K of the fuel according to an equation in which

$$M_K = V_{N2} \cdot \rho_K (\rho_{N2} - \rho_{tot}) / (\rho_{tot} - \rho_K);$$

generating a control signal representing M_K; and

controlling the flow in the conduit in accordance with the control signal.

4,270,559

METHOD FOR INSTALLING AN ADJUSTABLE FLOW RESTRICTING VALVE MEMBER IN A TUBULAR PIPE, AND A VALVE DEVICE FOR UTILIZATION OF THE METHOD

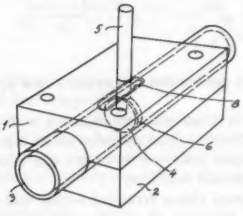
Kurt-Åke Wallberg, Lindholmens Trädgärdsstad, Vallentuna, Sweden (S-186 00)

Filed May 3, 1979, Ser. No. 35,906
Claims priority, application Sweden, May 8, 1978, 7805232
Int. Cl.³ F16L *55/07*; B23P *15/00*; F16K *1/22*
U.S. Cl. 137—15 **12 Claims**

1. A method of installing an adjustable flow restricting valve in a tubular pipe, comprising, cutting an elongated slot having major and minor axes through the pipe, the major axis extending parallel to the longitudinal axis of the pipe, providing a valve member having a flat face and a peripheral surface configuration corresponding to the interior of said pipe, providing

an elongated stem on said valve member, aligning said valve member with said slot with the flat face parallel to said major axis, inserting said valve member through said slot to a position surrounded by said pipe, with said stem extending through said slot to facilitate a rotary movement of said valve member between a position in contact throughout substantially its entire peripheral surface with the internal peripheral wall surface of said pipe, thus preventing a media flow therethrough, to desired adjustable positions in relation to the length axis of the pipe thus restricting a media flow to a desired extent through the pipe and sealing the area between said slot and said stem.

5. An adjustable flow restricting rotary valve for use with a tubular pipe conducting a fluid, comprising at least two housing members connected together to form a unitary housing body completely enclosing a length section of said pipe, means for connecting said housing members together, each of said housing members having a groove in the surface which faces another housing member, said grooves having a configuration



conforming to the exterior configuration of said pipe to form a tubular bore which closely embraces said pipe section, a valve member positioned in one of said grooves in one of said housing members, a valve stem extending through said one of said housing members in rotatable relationship therewith and being connected at its inner end to said valve member, said valve member being substantially flat and having a peripheral surface configuration conforming to the inner peripheral configuration of said pipe so that said valve may be rotated by said stem into varying flow restricting positions in said tubular pipe, said valve member being in contact throughout substantially its entire peripheral surface with said inner peripheral configuration of said pipe when in closed position, an elongted slot in said pipe slightly larger than and having a configuration conforming to the largest cross-section of said valve member, the longer dimension of said slot being parallel with the longitudinal axis of said pipe, so that when assembled said valve member is insertable through said slot and positioned within said pipe, and means to seal said slot.

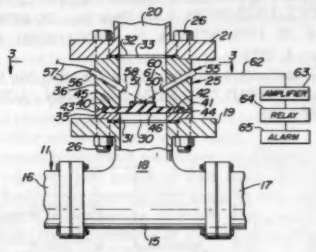
4,270,560

PHOTO-ELECTRIC BURST DISC INDICATOR

John G. Kearney, 2624 Hamilton Blvd., South Plainfield, N.J. 07080

Filed Nov. 19, 1979, Ser. No. 95,597
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—68 R **8 Claims**

1. A pressure relief for a fluid system comprising a housing having an opening connected in fluid communication with the system and a vent spaced from the opening, a diaphragm extending in closing relation across said housing for closing the housing to the passage of fluid, said diaphragm rupturing under a predetermined pressure to vent said system, reflective means on said diaphragm remote from said opening, and photo-elec-



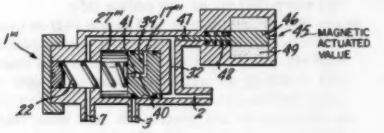
tric means optically associated with said reflective means for sensing the rupture of said diaphragm.

4,270,561

VALVE FOR A BURNER SYSTEM

Curt A. Bjorklund, Box 99, Ulricehamn, Sweden

Continuation-in-part of Ser. No. 481,841, Jun. 21, 1974, Pat. No. 3,987,810, Ser. No. 204,623, Dec. 3, 1971, abandoned, and Ser. No. 702,076, Jul. 2, 1976, abandoned. This application Jan. 10, 1979, Ser. No. 2,327
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1970, 7045109 [U]; Sweden, Mar. 17, 1971, 3410/71
Int. Cl.³ F23D *11/28*; F16K *11/00*
U.S. Cl. 137—107 **2 Claims**



1. Device for incorporation into a fuel system, comprising;

a fuel valve having a housing defining a valve chamber, a fuel supply conduit connecting the valve chamber, in use, to a liquid fuel supply under pressure, a burner conduit connecting the valve chamber, in use, to a burner, an evacuation channel extending through the housing and connected to the burner conduit during a period when the fuel valve is being closed, a movable valve piston member disposed in the valve chamber;

electromagnetic solenoid means energized for enabling the valve piston member to perform an opening movement from a closing position of the valve piston member, wherein it closes the supply conduit, to a working position of the valve piston member, wherein it opens the supply conduit for a flow of liquid fuel from the fuel supply to the burner;

means for effecting a closing return movement of the valve piston member from the working position to the closing position upon deenergization of the electromagnetic solenoid means; and

vacuum means, including a vacuum chamber disposed in the housing varied in volume by said piston valve member and increased in volume when said piston valve member returns to said closing position and connected with the evacuation chamber, for developing a low pressure in the vacuum chamber in response to the closing return movement of said piston valve member and for thereby sucking fuel back from the burner conduit during the closing return movement of the valve piston member.

4,270,562
FLUID SEQUENCE BYPASS APPARATUS

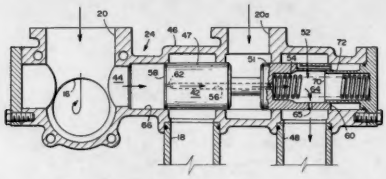
Hans G. Oberth, and Gerhard A. Aminger, both of Graz, Austria, assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00799, § 371 Date Sep. 28, 1979, § 102(e) Date Sep. 28, 1979 PCT Pub. No. WO81/00081, PCT Pub. Date Apr. 2, 1981

This PCT application filed Sep. 28, 1979, Ser. No. 93,076

Int. Cl.[3] **F01P** *7/14;* **F01M** *5/00;* **F16N** *13/22*

U.S. Cl. 137—115 **5 Claims**



1. In a system (**10**) having a pressurized fuel source (**14**), a sump (**50**), and a main (**16**) and at least one secondary (**18**) receptor to which pressurized fluid is supplied from said source (**14**), the improvement comprising:

a body (**46**) having a bore (**44**) therein;

a piston (**42**) reciprocally mounted in said bore (**44**), said piston (**42**) having a first end (**58**), a second end (**60**) and a tunnel (**56**) therethrough from said first end (**58**) to said second end (**60**);

biasing means (**52**) for biasing said piston (**42**) into a first position in said bore (**44**), said biasing means (**52**) including a spring (**54**) acting to motivate said piston (**42**) towards said first position in said bore (**44**) and a restricted orifice (**62**) for communicating the fluid via said tunnel (**56**) to said sump (**50**) via an exit orifice (**65**);

means (**66**) for motivating said piston (**42**) in opposition to said biasing means (**52**) and into a second position in said bore (**44**) in response to a pressure in said main receptor (**16**) reaching an initiating value (A), said motivating means (**66**) motivating said piston (**42**) into a third position in response to said pressure in said main receptor (**16**) reaching a selected value (D) above said initiating value (A);

means (**47**) for blocking delivery of said pressurized fluid to said secondary receptor (**18**) in response to said piston (**42**) being in said first position and for allowing said delivery in response to said piston (**42**) being in said second position, said delivery blocking and allowing means (**47**) allowing delivery of said pressurized fluid to said secondary receptor (**18**) in response to said piston (**42**) being in said third position;

means (**20***a*) for communicating fluid flow from said source (**14**) to said body (**46**);

means (**51**) for passing said fluid flow through said body (**46**) to said sump (**50**) in response to said piston (**42**) being in said third position and for not passing said fluid to said sump (**50**) in response to said piston (**42**) being in said first and second positions; and

additional biasing means (**68**), additive to said biasing means (**52**), for blocking said exit orifice (**65**) as said piston (**42**) moves from said second position towards said third position.

4,270,563
PRESSURE ACTUATED SAFETY DEVICE

Karl Holzinger, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Jun. 28, 1979, Ser. No. 53,045

Claims priority, application Switzerland, Oct. 7, 1978, 7457/78

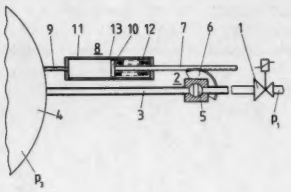
Int. Cl.[3] **G05D** *11/00*

U.S. Cl. 137—116.5 **3 Claims**

1. In a gas blast circuit breaker of the type having a low pressure reservoir for compressed gas, a source of gas at high pressure and supply means for conducting gas through a feed line from the high pressure source to the low pressure reservoir, said feed line ending at said reservoir, a safety device for preventing overpressures in the low pressure reservoir comprising:

safety valve means for interrupting a flow of the compressed gas through said feed means, which safety valve means includes a spherical stopcock, said spherical stopcock including a cock connected to a rotatable, toothed segment; and

actuating means for actuating said safety valve means in response to a pressure within said low pressure reservoir



exceeding a predetermined pressure, said actuating means including:

a cylinder in pressure communication with said low pressure reservoir, which cylinder senses a pressure in said low pressure reservoir through a line which is independent from said feed line;

a spring-biased piston arranged within said cylinder; and

a toothed rack connected to said piston and projecting from said cylinder, the rack having teeth which mesh with the teeth of the toothed segment of the spherical stopcock.

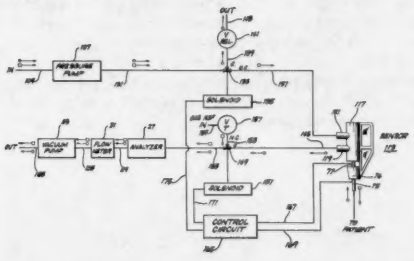
4,270,564
PURGING SYSTEM

Wayne E. Blackburn; Max D. Liston, both of Irvine, and William A. Stark, Costa Mesa, all of Calif., assignors to Liston Scientific Corp., Newport Beach, Calif.

Filed Jul. 24, 1978, Ser. No. 927,372

Int. Cl.[3] **A61B** *5/08*

U.S. Cl. 137—240 **11 Claims**



1. A purging system for removing foreign matter from a fluid conducting conduit, comprising:

a sensor adapted to be connected in a fluid conducting conduit for sensing foreign matter therein, said sensor having an output terminal at which an electrical output signal is generated when foreign matter is present;

timer means having an input terminal connected to said sensor output terminal, said timer means having an output terminal at which an output signal is generated for an adjustable duration of time when said input terminal receives an electrical signal, said timer means having means for adjusting said duration of time; and

pump means electrically connected to said timer means output terminal and being adapted to be connected to the same conduit in which said sensor is connected, said pump means being activated by said timer means output signal for said adjustable duration of time to purge the conduit to remove foreign matter therefrom.

4,270,565

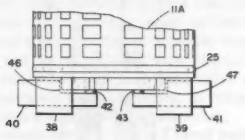
INLINE DISPERSAL VALVE

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn. 55343

Continuation-in-part of Ser. No. 958,167, Nov. 6, 1978. This application May 29, 1979, Ser. No. 42,762

Int. Cl.³ B01F *1/00*

U.S. Cl. 137—268 **3 Claims**



1. An inline dispersal valve for controllably releasing material into a fluid line comprising:

a housing having a means for attachment to a pressurized fluid line, said housing having an opening therein operable for fluid coupling with fluid in a fluid line;

a porous container slidably mounted in opening in said housing;

means for controllably raising or lowering said container into the pressurized fluid line to allow fluid to flow through said container to thereby dissolve soluble solid in said container and transport said dissolved material into the fluid stream;

a retractable stop operable for inward and outward motion, said retractable stop operable for holding said container in said housing and for retraction to permit release of said container from said housing;

a rotatable member for actuating said retractable stop; and

resilient means for maintaining said container in contact with said means for controllably raising or lowering said container.

4,270,566

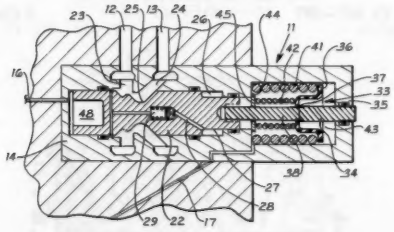
SELF-RESTRICTING SHUTOFF VALVE

David A. Struessel, St. Louis, Mo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1979, Ser. No. 102,701

Int. Cl.³ F16K *31/34*

U.S. Cl. 137—492.5 **3 Claims**



1. In combination with a fluid leak detector, a self-restricting shut-off valve comprising,

a first source of fluid under pressure,

a second source of fluid under pressure lesser in value than the pressure value of said first source of fluid,

a valve body having a bore,

an inlet line connecting said valve body to said first source of fluid under pressure and an outlet line connecting said valve body to an operable fluid system having lines subject to rupture,

a valve spool having a recess and a restrictor land, said valve spool being slidable positionable in said bore to a full-flow position, a partial-flow position and a no-flow position,

first and second fluid cavities, one each between each end of said valve spool and said valve body,

spring means biasing said valve spool to a partial-flow position whereby said restrictor land limits fluid flow from said first source through said recess to said outlet line,

a first passage connecting said first cavity with said first source of fluid whereby fluid in said first cavity biases said valve spool to a full-flow position, and

a second passage normally connecting said second cavity with said second source of fluid and switchably connectable with said first source of fluid by said leak detector to move said valve spool to a no-flow position when said leak detector detects a loss of said first source of fluid under pressure.

4,270,567

CONTROL VALVE FOR USE IN HYDRAULIC APPARATUS

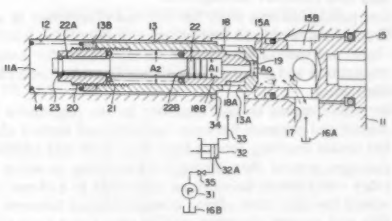
Toshiaki Tsukimoto, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,392

Claims priority, application Japan, Jan. 12, 1979, 54/2351[U]

Int. Cl.³ F16K *17/196*

U.S. Cl. 137—493.5 **3 Claims**



1. A control valve operating as a combined release and make-up valve for use in hydraulic apparatus comprising:

a valve housing provided with a cylindrical blind hole, a first opening connected to an external hydraulic supply device and a second opening connected to a hydraulic tank;

a valve seat tightly engaged with the inlet of said blind hole to close said inlet and provided with an inner recess communicated with said second opening;

a cylindrical hollow make-up poppet slidably inserted into said blind hole, said make-up poppet having a bottom end at one end provided with an opening communicated with said inner recess of said valve seat and having a hole communicated with said first opening;

a first resilient member disposed between the bottom of said blind hole and the other end of said make-up poppet so as to resiliently urge the make-up poppet towards said valve seat;

a cylindrical release poppet slidably inserted within said make-up poppet and provided with an inner cylindrical hole which communicates with said inner recess of said valve seat, an inner diameter of said inner cylindrical hole of said relief poppet being predetermined to be larger than the diameter of said end opening of said make-up poppet;

screw means adjustably engaged with the inner surface of the other end of said make-up poppet;

a cylindrical resilient member disposed within said make-up

poppet between said screw means and said relief poppet; and

a balanced poppet having one end tightly inserted into said inner cylindrical hole of said relief poppet and the other end connected to a piston rod which is engaged with said screw means.

4,270,568

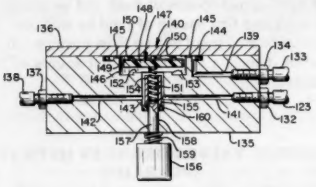
SENSOR WITH ADJUSTABLE PRESSURE RESPONSIVE DETECTION AND CONTROL

Tommy L. Gray, Dallas, Tex., assignor to Span Instruments, Inc., Plano, Tex.

Division of Ser. No. 797,914, May 18, 1977, Pat. No. 4,173,150. This application Feb. 21, 1979, Ser. No. 13,668

Int. Cl.[3] F16K *31/12*; G01L *7/04*

U.S. Cl. 137—498 **6 Claims**



1. A fluid pressure relay comprising:

a relay body;

first chamber means in said body;

second chamber means in said body having an opening into said first chamber means;

a first passage in said body for external connection in communication with said first chamber means;

at least one additional passage in said body for external connection and in communication with said second chamber means;

relay valve means in said chamber means responsive to a differential pressure between said first and second chamber means resulting from a fluid flow from said additional passages greater than through the opening to move said relay valve means between an open state to a closed state where the open state allows communication between said first and second chambers and in the closed state closes the opening between said chamber to allow communication between said additional passages and block communication with said first passage, said valve means being actuated from said open state to said closed state by predetermined pressure differential between said first and second chamber means; and

manual reset means for actuating said valve means from the closed state to the open state by reducing the pressure differential below the predetermined level.

4,270,569

VALVE ASSEMBLY FOR THE REMOTE CONTROL OF FLUID FLOW HAVING AN AUTOMATIC TIME DELAY

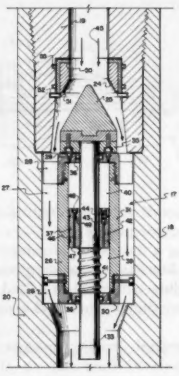
Robert G. Reay, and Ronald Rachuk, both of Rocky Mountain House, Canada, assignors to Christensen Inc., Salt Lake City, Utah

Filed Oct. 16, 1978, Ser. No. 951,344

Int. Cl.[3] F16K *15/06, 21/10*

U.S. Cl. 137—514.7 **8 Claims**

1. A float valve assembly for the remote control of the fluid flow comprising in combination a cylindrical casing, a fluid passageway extending axially through said casing and a valve assembly within said passageway dividing said passageway into one portion above said valve assembly and another portion below said valve assembly, said valve assembly including a valve seat in said passageway, a valve normally engaging said valve seat and sealing said passageway, spring means normally maintaining said valve upon said seat until a predetermined pressure of fluid through said passageway from said one portion thereof, moves said valve from said seat against the pressure of said means, means to control the movement of said valve from said seat and time delay means to control the movement of said valve onto said seat when back pressure of fluid from said other portion of said passageway below said valve is greater than the pressure of fluid within said one portion of said passageway above said valve seat, a stem extending from said valve towards said other portion of said passageway, a fluid containing cylinder having closed ends, mounted axially within said other portion of said passageway, said valve stem extending axially through said cylinder and being in sealing



reciprocal relationship with the closed ends of said cylinder, said means to control the movement of said valve and said time delay means both being situated within said cylinder and a dashpot type housing secured to said valve stem and reciprocal within said cylinder thereby dividing said cylinder into a first part and a second part, said means to control the movement of said valve from said seat including a bore hole extending through said housing and communicating between said first and second part of said cylinder, and a one-way valve operatively mounted in said bore hole, said one-way valve opening when said first mentioned valve is moving away from said valve seat thereby transferring fluid between said first and second part of said cylinder at a predetermined rate of flow.

4,270,570

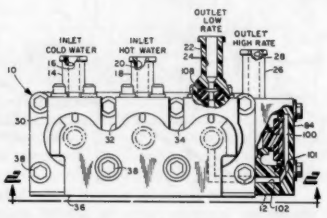
VALVE ASSEMBLY

Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 15, 1979, Ser. No. 84,957

Int. Cl.[3] F16K *19/00*

U.S. Cl. 137—597 **5 Claims**



1. A mixing and flow control valve comprising:

(a) body means including structure defining:

(i) a fluid mixing chamber;

(ii) a first fluid inlet passage communicating with said chamber, said passage having an inlet port adapted for connection to a source of unheated fluid, said passage including a first valve seating surface;

(iii) a second fluid inlet passage communicating with said chamber, said passage having an inlet port adapted for connection to a source of heated fluid, said passage including a second valve seating surface;

(iv) a first or high rate fluid outlet passage communicating with said mixing chamber and defining a third valve seating surface;

(v) a second or low rate fluid outlet passage communicating with said mixing chamber and defining a fourth valve seating surface;

(b) valve means and a movable valve member disposed adjacent each of said first through fourth valve seats, each valve member being movable from a position connecting the respective adjacent valve seats to block fluid flow thereover and a position spaced from the respective adjacent valve seat to permit fluid flow thereover, wherein said valve means adjacent said third valve seat includes pressure responsive means defining, in cooperation with said body means, a pressure bias chamber;

(c) said body means further defines a bleed passage communicating with said pressure bias chamber directly with said second fluid outlet port;

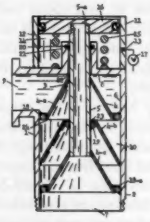
(d) individual actuator means connected respectively to each of said first, second and fourth valve means, said actuator means being individually operable upon energization to move the respective individual valve members to a position spaced from its respective valve seat, each of said first, second and fourth actuator means including means operable to bias its respective valve means to the fluid flow preventing position, wherein, upon energization respectively of the valve actuator means for said first, said second or said first and second valve means hot, cold or both hot and cold fluid is delivered to said mixing chamber and, in the absence of energization of said actuator for said fourth valve means, fluid pressure in said mixing chamber causes said pressure responsive means to move said third valve to the flow preventing position and prevent discharge through said first or high rate flow outlet, and upon energization of said actuator means for said third valve means, flow discharges through said second or low rate outlet and the fluid pressure therein is applied to said pressure bias chamber through said bleed passage and the pressure in said bias chamber acts on said pressure responsive member to move said third valve means to contact said third valve seat surface and prevent flow to said first (high rate) outlet.

4,270,571

HIGH PRESSURE LETDOWN VALVE

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Jul. 6, 1979, Ser. No. 55,470
Int. Cl.[3] F16K *47/04*
U.S. Cl. 137—614.11 **6 Claims**



1. A throttle valve for pressure letdown comprising: a pressure reducing valve section and a valve operating section, including means for interconnecting said first with said second valve sections in an operable relationship therebetween so as to enable a simultaneous pressure reducing while valving high pressure fluid therethrough in a tortureous pathway with large pressure reduction and exhaust at substantially lower fluid pressures,

said pressure reducing valve section including a valving means comprising an elongated valve housing with a first bore passing therethrough open to serve as low pressure fluid exhaust port means and a second smaller coaxial bore adjacent said second valve operating section and interconnecting said first and second valve sections, a central stem of a valving assembly housed inside said pressure reducing valve section and slidably received in said second bore and including operating means for operating said valving means, said valving assembly being disposed centrally in essentially coaxial elongated relationship with said first and second bores,

a side port entering perpendicularly through a housing wall and communicating with said first bore,

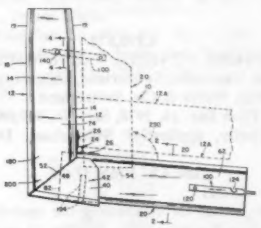
said valving assembly further including a plurality of conical baffles attached to said first bore and said stem, alternately, said alternately attached baffles respectively sealing on said bore and said stem when said valving means is closed and spaced along the axial length of said central stem between said fluid side port and said first bore so as to provide an alternating valve and baffle flow structure with a multitude of flow reversals accompanied by alternatingly occurring flow directional changes.

4,270,572

HINGING DOWNSPOUT ASSEMBLY

Clifford J. Jarzynka, 802 N. Harvard St., Harvard, Nebr. 68944

Filed Sep. 26, 1979, Ser. No. 78,912
Int. Cl.[3] F16L *27/00*
U.S. Cl. 137—615 **6 Claims**



1. A hinging down-spout assembly comprising first and second elongated sections disposed when said second section is in use at substantially a right angle to each other, said sections each having a first side a second side and a right side and a left side, a hinge assembly having a hinge axis and attaching first sides of said first and second sections together in a manner whereby said first and second sections can be hinged into storage position in parallelism with each other, said axis being at one end of said first section, said first section having its said one end inclining substantially at an acute angle with respect to the elongation of said first section, a lapping section attached to said first section and having a connecting portion disposed on the opposite side of said second section from said hinge, said lapping section having right and left side portions spaced apart along a line parallel with said axis and disposed transverse to said axis in substantial parallelism with each other and extending adjacent right and left sides respectively of said second section and serving as a trough to direct water flowing between said first and second sections.

4,270,573

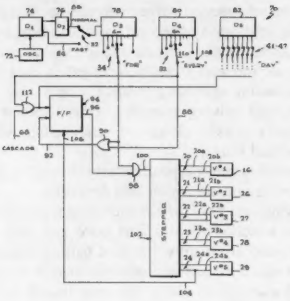
CONTROLLER FOR FLUID FLOW SYSTEMS

Oded E. Sturman, and Benjamin Grill, both of Northridge, Calif., assignors to Hydronic Systems, Inc., Woodland Hills, Calif.

Division of Ser. No. 927,942, Jul. 25, 1978. This application Sep. 17, 1979, Ser. No. 76,121

Int. Cl.[3] A01G *25/00*

U.S. Cl. 137—624.2 7 Claims



1. A fluid flow controller comprising:

a clock means which generates clock signals;

a timing circuit having an input connected to said clock means and having at least one output, said timing circuit including a dividing means, for generating a valve opening signal on an output after a predetermined settable number of clock signals to turn on a valve, and for generating a valve closing signal on an output after another predetermined settable second number of clock signals to turn off the valve; and selector means coupled to said clock means for operating it at a plurality of different frequencies, whereby to enable different speed automatic cycling of a system at a predetermined setting.

4,270,574

CLOCKWORK CONTROL VALVE MECHANISM

Heinz Graber, Oberkulm, Switzerland, assignor to Aktiengesellschaft Karrer, Weber & Cie, Switzerland

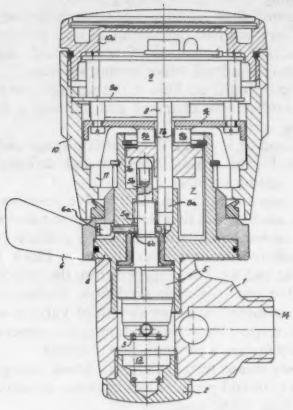
Filed Dec. 14, 1978, Ser. No. 969,688

Claims priority, application Switzerland, Dec. 28, 1977, 16112/77

Int. Cl.[3] F16K *31/48*

U.S. Cl. 137—624.11 8 Claims

1. In an apparatus for controlling the operation of a fluid mixer of the type having a valve member to open and close a valve passage in a valve housing and a clockwork mechanism for timing the opening and closing of the valve member, the housing having a valve chamber with a valve outlet passage, the improvement comprising an elongated valve member axially movable in the chamber, said elongated valve member having an axially extending follower portion, a cam plate rotatably mounted in said housing adjacent one end of said follower portion and engaged with said follower portion for the controlled movement of said valve member, spring means for biasing said valve member towards said cam plate to engage said follower portion with said cam plate, said cam plate having a control surface acting on said follower portion to move said valve member axially during a portion of rotation of said cam plate, a sleeve member rotatably mounted on said housing operatively connected to the clockwork mechanism, said sleeve member being rotatably operative to wind the clockwork mechanism during a first portion of the rotational movement of said sleeve member, interengaging means for engaging said clockwork mechanism and said cam plate which are disengaged during said first portion of the rotational movement and which are engaged during a further rotational movement of said sleeve member to drive said cam plate during said further rotational movement while winding of said clockwork



mechanism continues during said further rotational movement, and said interengaging means being operative to drive said cam member oppositely upon release of said sleeve member.

4,270,575

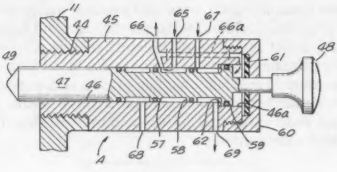
SPOOL VALVE ASSEMBLY

Frank A. Reed, deceased, late of South El Monte, Calif., and Paul M. Diemert, executor, 1639 Vallejo Way, Upland, Calif. 91786, assignors to Paul M. Diemert, San Antonio, Tex.

Division of Ser. No. 885,621, Mar. 13, 1978, Pat. No. 4,176,987. This application Mar. 23, 1979, Ser. No. 23,131

Int. Cl.[3] F15B *13/04*

U.S. Cl. 137—625.69 5 Claims



1. A flow control valve comprising:

(a) main body having a central bore open at each end;

(b) a two-position spool valve having no neutral operating position slidably supported in said bore for movement between first and second operating positions and adapted to be actuated in one axial direction to said second position via the open end of said central bore;

(c) means at one end of said spool valve for actuating the same from said second position to said first position;

(d) said spool valve having only first, second, third and fourth annular grooves separated by first, second and third annular lands;

(e) said main body having (1) a pressurized fluid supply passage continuously in communication with said second groove, (2) separate fluid venting passages for venting only unpressurized fluid from a respective one of said first and third grooves and in continuous communication therewith, (3) a fluid passage in selective communication with either said first or said second groove depending upon the position of said spool valve axially of said bore, and in communication with said fourth groove when in communication with said second groove, and (4) a fluid

passage in communication with either said second or said third groove depending upon the position of said spool valve axially of said bore; and

(f) means at the other end of said spool valve for actuating the same to said second position.

4,270,576

SELF-CONTAINED FLUID JET-MIXING APPARATUS AND METHOD THEREFOR

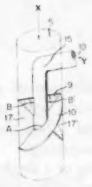
Masahiro Takeda, and Kenjiro Takeda, both of No. 16-14, 4-chome, Shimouma, Setagaya-ku, Tokyo, Japan (13)

Filed Jun. 19, 1979, Ser. No. 49,913

Claims priority, application Japan, Jun. 20, 1978, 53/83671[U]

Int. Cl.³ F16K *19/00*

U.S. Cl. 137—888 **5 Claims**



1. In a self-contained fluid jet-mixing apparatus for promoting mixing and contact actions between first fluids such as a gas, a liquid, a fluidized solid and/or a mixture thereof in a fluid flow deflecting system including cylindrical fluid passageway means defining a cylindrical fluid path; means for providing said first fluid with appropriate flow velocity and pressure conditions in a given direction within said cylindrical fluid passageway means; fluid flow deflecting means disposed centrally in said fluid passageway means and adapted to cause a flow of said first fluid to be deflected in a spiral or whirling flow state at a predetermined angle of inclination toward downstream of said fluid, thereby to cause said first fluid to be accelerated and distributed at a predetermined flow configuration within said passageway means; said flow deflecting means being guide vane means which comprise a partition member of an inverted triangle shape with at least two equal sides, with the base thereof extending diametrally with respect to said cylindrical passageway means and with the inverted apex pointed in coincidence with the central axis of said cylindrical passageway means, and a set of planar panel members having a generally semi-elliptic shape, each panel member extending at the major axis thereof from one side of said triangle-shaped partition member other than the base thereof in opposite directions toward an inner wall surface of said passageway means and in symmetrical relationship with respect to the central axis of said cylindrical passageway means in such a manner that said semi-elliptic panel members are inclined with each other at the apex angle of said triangle partition member toward downstream of said first fluid flow, and at the outer circumferential edges thereof joining closely with said inner wall surface of said passageway, thereby defining a spiral flow path for said first fluid along said central axis thereof, the improvement which further comprises fluid conduit means having a straight-through opening therein and extending centrally and in the longitudinal direction along said axis of said passageway means, thereby to define a straight-through opening or passageway independent from said fluid passageway means and adapted to allow second fluid or fluids outside of said passageway means to be withdrawn or introduced into said passageway means for admixing the said first fluid under the negative pressure created by said flow deflecting means.

4,270,577

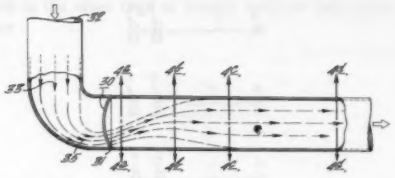
AIR FLOW DEVICE

Carlton E. Brown, and Walter A. Tatham, both of Tucson, Ariz., assignors to Environmental Air Products, Inc., Tucson, Ariz.

Filed Nov. 29, 1979, Ser. No. 98,678

Int. Cl.³ F15D *1/02*; G01F *15/02*

U.S. Cl. 138—39 **2 Claims**



1. A device

(a) for insertion in an air duct having

(1) air flow, and

(2) a longitudinal center line,

(b) to reduce turbulence and provide uniform cross-sectional air flow downstream of the device,

comprising

(a) a honeycomb material having a plurality of passages, wherein

(b) the honeycomb material is in the form of a spherical segment, and

(c) the passages focus at a point on the duct center line downstream of the device when inserted in a duct.

4,270,578

HARNESS FOR LOOMS

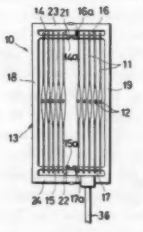
Hissai Nishiyama, Hayahoshi, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,250

Claims priority, application Japan, Jul. 13, 1978, 53-96429

Int. Cl.³ D03C *9/06*

U.S. Cl. 139—92 **8 Claims**



1. A harness for looms comprising, in combination:

(a) a plurality of heddles;

(b) a rectangular heddle frame including first and second pairs of bars projecting from opposed vertical sides of said rectangular frame toward and terminating short of each other, said heddles being divided into two groups carried separately by said first and second pairs of bars at opposite ends of each heddle; and

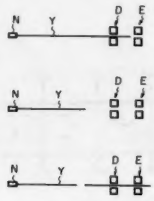
(c) a pair of connectors each connecting and bridging one of said first pair of bars and one of said second pair of bars at their free ends, each said connector having a snap hook engageable with one of said first pair of bars and one of said second pair of bars.

4,270,579

SENSOR WEFT MECHANISM FOR FLUID JET LOOMS

Masakazu Nakanishi, Kanazawa, Japan, assignor to Tusdakoma Kogyo Kabushiki Kaisha, Japan

Filed Apr. 3, 1979, Ser. No. 26,673
Claims priority, application Japan, Apr. 4, 1978, 53-044614
Int. Cl.[3] D03D *51/34*
U.S. Cl. 139—370.2 5 Claims



1. An improved weft sensor mechanism for a fluid jet loom, comprising:

first weft sensor means for determining when a weft has been properly inserted into the loom;

additional weft sensor means for determining when a weft inserted into the loom has been broken; and

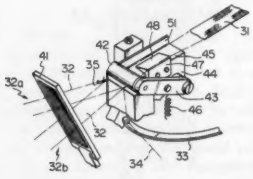
circuit means cooperating with said weft sensor means to form a detection circuit for determining whether the weft has been properly or improperly inserted and whether it has been broken, and for stopping the loom when a weft has been inserted into the loom improperly or has been broken or both.

4,270,580

METHOD AND APPARATUS FOR WEAVING WEB

Kiyoshi Nakada, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,704
Claims priority, application Japan, Oct. 9, 1978, 53-124291
Int. Cl.[3] D03D *47/42*
U.S. Cl. 139—431 2 Claims



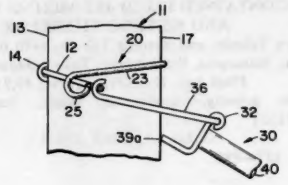
1. A needle loom including a member defining a table on which a woven web is supported; a filling carrier disposed at one side of the table defining member so as to swing through successive sheds formed by warp ends in the upstream of the woven web; and a latch needle disposed at the other side of the table defining member, said filling carrier and latch needle being so adapted that a segment of a filling is extended through each shed from said one side to the other and picked up by said latch needle there and then back to said one side, characterized in that a ramp is formed on said table for biasing the woven web to the latch needle, said ramp inclining in the direction perpendicular to the feeding direction of the woven web so that it descends as it goes toward the latch needle.

4,270,581

VINEYARD TRELLIS WIRE RETENTION

Gerald L. Claxton, and Darrell C. Horn, both of Fresno, Calif., assignors to Up-Right, Inc., Berkeley, Calif.

Filed Mar. 26, 1979, Ser. No. 23,751
Int. Cl.[3] B21F *29/02*
U.S. Cl. 140—57 4 Claims



1. Apparatus for the retention of a horizontal trellis wire against the front of a vertical post, said post having a given front-to-back thickness and a side-to-side width at the back thereof, said apparatus comprising:

a retaining clip consisting of a single piece of wire bent into a substantially U-shape, with a generally straight mid-portion and generally straight arms extending from the ends of said mid-portion and diverging away from each other, said mid-portion having a length substantially equal to said side-to-side width of the post at the back side thereof, said arms having a length substantially less than said front-to-back thickness of said post, said arms each having a hook at the free end thereof for hooking engagement with said trellis wire, said hooks each being greater than three-quarters of a helical turn to form an eye at the free ends of the arms, said eyes being open in a direction towards said mid-portion of said retaining clip, the helical turn on one retainer clip arm being opposite to and extending in a direction away from the helical turn on the other retainer clip arm,

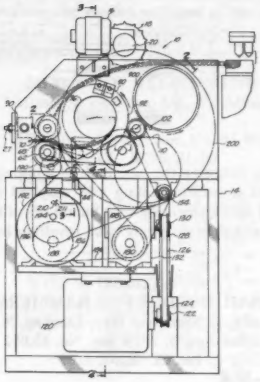
an installing tool having a head member, a single piece of wire bent into a substantially U-shape and having a straight mid-portion and a pair of parallel arms bent at generally right angles to said mid-portion, said mid-portion being mounted on said head member for pivotal movement relative to said head member and about the axis of said mid-portion, each of said installing tool arms extending away from said head member and having a hook at the free end thereof for hooking engagement with said trellis wire, said head member having a bearing member and a fulcrum surface, said bearing member and said fulcrum surface being spaced from each other and simultaneously engageable with the back of said post, said fulcrum surface being parallel to and spaced from said axis of pivotal movement of said installing tool arms, an elongaged handle fixed at one end thereof to said head member, said handle lying in a plane perpendicular to said axis of pivotal movement of said installing tool arms, said installing tool arms each having a length approximately equal to said front-to-rear thickness of said post for enabling said arms to be hooked onto said trellis wire when said bearing surface engages said back of the post, said installing tool arms being spaced apart by an amount greater than the greatest distance between said retainer clip arms, the distance between said axis of pivotal movement of said installing tool arms and said fulcrum surface being greater than the difference between the lengths of said retainer clip and installing tool arms.

4,270,582

SPRING NESTING APPARATUS

Harry H. Norman, Dana-Point, Calif., assignor to Eleven States Mfg. Corp., South Gate, Calif.

Filed May 17, 1979, Ser. No. 39,884
Int. Cl.[3] B21F *35/04*
U.S. Cl. 140—71 R 12 Claims



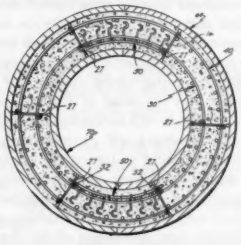
1. An elongated element nesting apparatus, said apparatus comprising;
a housing,
a primary cage within said housing,
a secondary cage coaxial with said primary cage and laterally displaced therefrom,
a means for longitudinally loading an elongated element into said primary cage,
a means for laterally forcing said elongated element from said primary cage into said coaxial secondary cage,
a means for controlling the number of elongated elements forced into said secondary cage,
a plurality of secondary cages having their axes parallel and laterally displaced from said secondary cage,
a means for rotating said plurality of secondary cages into consecutive coaxial relationship with said primary cage, and
a means for forcing said elongated elements from said secondary cage.

4,270,583

CONCRETE PIPE REINFORCEMENT SPACER BAR PROCESS

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Filed Jul. 11, 1979, Ser. No. 56,592
Int. Cl.[3] B21F *15/06, 17/00*
U.S. Cl. 140—92.1 44 Claims



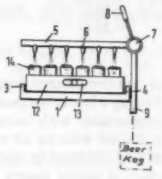
1. A method for assembling inner and outer generally cylindrical pipe reinforcing cages, each cage including a plurality of longitudinal wire strands joined to a plurality of circumferential wire strands, said method comprising: providing a spacer bar having a tie rod and a plurality of links joined to and spaced along the length of said tie rod, said links being generally parallel to one another and each including a hook spaced from said tie rod a distance approximately equal to the desired spacing between said inner and outer cages; inserting said links through one of said cages until said tie rod engages said one cage and then hooking said hooks over one or more wire strands in the other cage to thereby hold the two cages together.

4,270,584

PROCESS FOR SUPPLYING BEVERAGES

Marinus W. van Lieshout, Made, Netherlands, assignor to Skol Brouwerijen N.V., Breda, Netherlands

Continuation of Ser. No. 881,505, Feb. 27, 1978, abandoned.
This application Oct. 9, 1979, Ser. No. 82,943
Claims priority, application Netherlands, Feb. 25, 1977, 7702042
Int. Cl.[3] B65B *3/22*
U.S. Cl. 141—11 1 Claim



1. The process for dispensing beverages by beverage tapping directly from a keg under pressure into open cups for better taste and retaining of foam, comprising in combination the steps of arranging said cups in a plurality of rows in each of a plurality of containers, the containers being movable closely together transversely of said rows along a transporting surface formed by a top part of an endless conveyor belt, dispensing a beverage continuously from a plurality of nozzles in a row above said cups, said nozzles corresponding in number to the number of cups in each row, each nozzle being positioned above an open cup in a row, said cups in each row being closely adjacent cups in successive rows, continuously moving said containers and cups transversely of said rows to position the cups of each row under the row of nozzles, opening a manually operated beverage tapping valve controlling the flow of beverage to all said nozzles simultaneously by way of a projecting cantilever manifold without need to close the tap valve after filling all cups in a row and continuously dispensing a beverage under pressure from said row of nozzles and progressively moving said row of cups in said plurality of containers successively under said continuously dispensing nozzles to dispense said beverage, maintaining the dispensing direction adjustment and thereby dispensing said beverage from each nozzle against the wall of each cup, so that said rows of cups are filled successively as said containers with said rows of cups are moved under said nozzles with only negligible loss of beverage and with said beverage consequently retaining required froth collar of foam in the cups during beverage tapping by maintaining proper temperature and pressure of the beverage during said continuous dispensing of the beverage.

4,270,585

FILLING DEVICE HAVING AN AIR RETURN PIPE FOR FILLING CONTAINERS WITH GAS-CONTAINING LIQUID

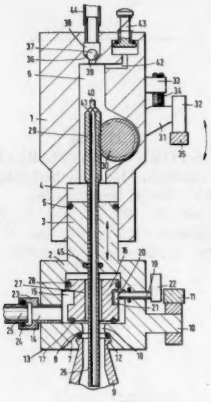
Manfred Mette, Hamburg, Fed. Rep. of Germany, assignor to Ortmann & Herbst GmbH, Hamburg, Fed. Rep. of Germany; Rogers Corporation, Rogers, Conn. and Rogers Corporation, Rogers, Conn.

Filed Feb. 26, 1979, Ser. No. 15,284

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808345

Int. Cl.³ B65B *31/00*

U.S. Cl. 141—37 **6 Claims**



1. A device for filling gas-pressurized liquid into containers, comprising a housing having a lower section provided with an opening adapted to communicate with containers to be filled, and an upper section provided with an air return chamber; an air return pipe reciprocably mounted in said housing between a lower position in which it partly enters a container to be filled, and an upper position in which it is upwardly retracted from the container, said air return pipe having an upper portion located in said air return chamber and axially spaced pipe openings which are permanently open to the first mentioned opening and to said air return chamber, respectively; and means for raising and lowering said air return pipe between said positions thereof, including a rack on said upper portion and a direction-reversible rotary drive shaft sealingly extending through a wall bounding said air return chamber and having an inner portion located therein, said inner portion having a pinion meshing with said rack.

4,270,586

CONTINUOUS FELLING OF TREES

Bruce Hyde, and Wayne Tyndall, both of Prince Albert, Canada, assignors to Prince Albert Pulpwood Ltd., Saskatchewan, Canada

Filed Mar. 22, 1977, Ser. No. 780,043

Int. Cl.³ A01G *23/08*

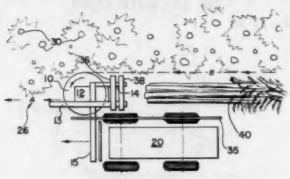
U.S. Cl. 144—309 AC **2 Claims**

1. A method of continuously felling trees comprising the steps of:

moving a power driven tree cutting means along a path through a stand of trees by means of a mobile power unit;

severing trees with said tree cutting means in said path from their root portions in a plane substantially parallel with the ground as said tree cutting means moves continuously forwardly along said path;

applying a force with said tree cutting means on the butt ends of the cut trees to move the butt ends forwardly in the direction of travel of the mobile power unit, said force being of sufficient magnitude so as to move the butt ends of the trees forwardly at a rate which causes the bodies of the severed trees to fall rearwardly in a substantially parallel direction along the path of movement of said mobile power unit; and



successively snagging the base ends of a plurality of successively cut trees and pulling said snagged ends forward with said cutting means until a bunch of cut trees has been formed, and then dropping each resulting bunch.

4,270,587

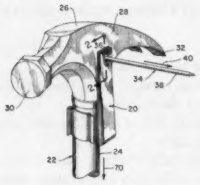
NAIL HOLDER FOR HAMMERS

Andrew W. Ludy, 17 Sherwood Way, Landing, N.J. 07850

Filed Aug. 2, 1979, Ser. No. 63,052

Int. Cl.³ B25C *1/00*

U.S. Cl. 145—30 R **8 Claims**



1. A nail holder for gently holding a nail, having a head and a shank, juxtaposed with the head of a hammer for the purpose of starting the nail, especially in relatively soft materials, and selectively releasing the nail without disturbing the started purchase, said nail holder comprising:

a first cantilever member of resilient spring material extending between opposite first and second ends and having a notch including an entrance opening at the first end and extending along the first cantilever member for a relatively short distance in a longitudinal direction toward the second end for receiving the shank of the nail and locating the nail closely adjacent the first end of the first cantilever member;

a second cantilever member of resilient spring material extending generally coextensive with the first cantilever member between opposite first and second ends, the first end of the second cantilever member being juxtaposed with the first end of the first cantilever member and including a portion overlapping the notch therein, said first ends being resiliently biased toward one another by virtue of the resiliency of the spring material of the cantilever members such that the head of the nail whose shank is received in the notch will be clamped gently between the first ends, and the shank will project in a given direction generally perpendicular to the cantilever members;

the first and second cantilever members being joined at the second ends thereof, the cantilever members each having a length great enough to provide sufficient flexibility to enable relatively free movement of the first ends relative to the second ends and relative to one another in the given direction in which the nail shank projects; and

attachment means at the second ends for attaching the cantilever members to the hammer, with the second ends lo-

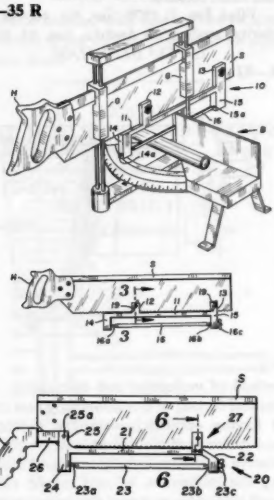
cated below the hammer head and the cantilever members extending upwardly to place the first ends in juxtaposition with the hammer head, whereby movement of the hammer head in a direction parallel to the given direction will enable starting of the nail and movement of the hammer head downwardly in the direction parallel to the longitudinal direction of extent of the notch will enable selective release of the nail head from between the first ends without disturbing the started purchase of the nail.

4,270,588

MITER SAW ATTACHMENT

Charles H. Neft, 3432 Emerson Ave. S., Minneapolis, Minn. 55408

Filed Jun. 6, 1979, Ser. No. 45,968
Int. Cl.³ B27B *21/00*
U.S. Cl. 145—35 R **4 Claims**



1. An attachment device for attaching a second cutting blade to a miter saw, said attachment device including:

a. a longitudinally extending frame member;

b. a pair of spaced apart, upstanding link members arranged on the respective ends of said frame member, each of said link members including a pair of bifurcated arms to receive the blade of the miter saw therebetween;

c. means for clamping said bifurcated arms to the blade of the miter saw to positively hold the frame member directly therebelow;

d. a pair of downwardly directed leg members arranged on said frame member; and,

e. means for attaching the second cutting blade between said leg members such that the same is positioned directly below and in alignment with the blade of the miter saw.

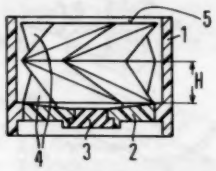
4,270,589

CONTAINER OF VARIABLE VOLUME

Joachim Heinzl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,586
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831999
Int. Cl.³ B65D *1/40, 7/42, 83/00*
U.S. Cl. 150—0.5 **5 Claims**

1. A closed variable volume container with stable wall components connected by fold lines accomodating uniform folding of the wall components to collapse the container to a substantially no volume enclosure which comprises a pair of opposed end walls of equilateral polygonal shape positioned in parallel planes, one of said end walls being rigid and having a dispensing outlet, an intermediate peripheral wall connecting said end walls adapted to fold to bring the pair of end walls together, said peripheral wall having a plurality of axially stacked rows each formed from a plurality of congruent triangular walls equal to twice the number of sides of the polygonal end walls, each row having opposite ends formed by base lines of half of



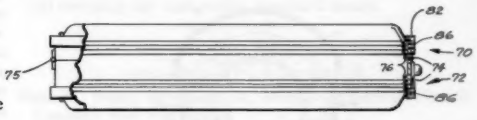
the triangular walls, fold lines connecting the two sides of each triangular wall to the sides of two adjacent triangular walls with the base lines defining spaced parallel polygonal area and each triangular wall having a corner point opposite its base line offset laterally from the base line to turn as the container is collapsed and effect folding of the triangular walls on their fold lines.

4,270,590

CASE WITH A CHANGEABLE EXTERNAL APPEARANCE

Joseph F. Marshall, 1533 1/2 Centenella, Inglewood, Calif. 90302

Filed Sep. 24, 1979, Ser. No. 78,489
Int. Cl.³ A45C *3/02, 3/08*
U.S. Cl. 150—1.6 **4 Claims**



1. A case with a changeable external appearance comprised of mating sections hinged along one edge, each section having a rigid framework with at least one releasable fastener, and each section is provided with a plurality of side coverings formed as nested shells compressed together; each shell having an outer surface for exterior exposure, and each shell being selectively positionable for external exposure, and said shells of each section are captured by said rigid framework and releasably held by said fastener, whereby each of said outer surfaces of said shells of said plurality of side coverings is selectively positionable for external exposure to thereby conceal therebeneath the outer surfaces of the other shells of the same section.

4,270,591

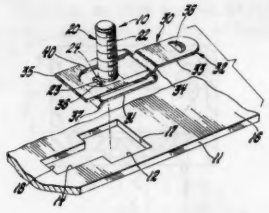
FASTENER ASSEMBLY

Donald H. Gill, St. Clair Shores; Joseph A. MacRae, Troy, and Compton J. Cottrill, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 29, 1979, Ser. No. 25,288
Int. Cl.³ F16B *39/00*
U.S. Cl. 411—112 **2 Claims**

1. A fastener assembly for use with a support panel having an opening therethrough and a slot extending from the opening, said fastener assembly including a bolt and an attaching clip, said bolt having a threaded shank with a head on one end thereof, said head being wider than the slot; said attaching clip of resilient material including a base portion of a size to pass

through the opening and wider than the slot for abutment against one side of the support panel adjacent to the slot, an upturned end portion for positioning on the opposite side of the panel and having a tab extending therefrom for abutting relation with the edge of the support panel defining the opening at a location opposite the slot, and a return bent portion, having a slot aperture therein extending over said base portion for



abutment with the opposite side of the panel from said base portion, said base portion having an aperture therethrough aligned with said slot aperture; said bolt being positioned to have said threaded shank thereof extending through said aperture and said slot aperture whereby said head is positioned to abut against said base portion on the side thereof opposite said return bent portion.

4,270,592

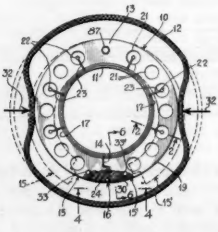
UNITARY RUN-FLAT SYSTEMS FOR INFLATABLE TIRES AND LOCK MEANS

Theodore C. Patecell, 33-52 156th St., Flushing, N.Y. 11354

Continuation of Ser. No. 774,762, Mar. 7, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,853

Int. Cl.³ B60C *17/04*

U.S. Cl. 152—158 **24 Claims**



1. A run-flat insert for inflatable tires of the tubeless type wherein beads at the inner periphery of the tire are adapted to sealably engage side flanges of a mounting rim, said insert comprising a single joint, unitary ring member, split at one circumferential point to provide normally spaced end portions capable of relative planar and circumferential movement, said end portions having interfitting contours adapted to assure mating and alignment thereof, lock means on said end portions automatically engageable by movement of said end portions toward each other to thereby secure together said end portions to form a closed ring having an outer periphery protruding beyond said rim flanges and an inner periphery having firm and substantially continuous engagement circumferentially of said rim between said flanges in a manner to be rotatable on the rim when load-bearing, said split ring member having a continuous outer periphery of solid cross section and means providing expansive capability at the inner periphery thereof, said expansive capability being such as to provide sufficient planar flexibility to permit the forced spiral feed of said ring member into a tire, and sufficient circumferential flexibility to permit forced spreading of said end portions in passage of said ring member over a rim flange, and to finally permit radial compression to engage said lock means, said automatic lock means being the only circumferential joining of said end portions and consisting of resiliently engaged lock parts requiring resilient manual disengagement when removal of the insert from the mounting rim is desired, said lock means being so positioned and structured as to enable said resilient manual disengagement to be effected by access to only one side of said insert, and the means providing expansive capability at the inner periphery of said split ring comprising, at least in part, the employment of suitably deformable construction material.

4,270,593

METHOD OF CHANGING THE CROSS SECTIONAL FORMAT OF A STRAND AND A PLATE MOULD FOR CARRYING OUT THE METHOD

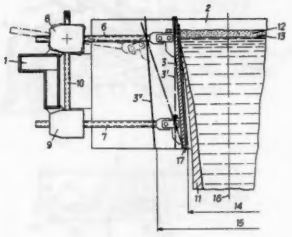
Ernst Bachner, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 7, 1979, Ser. No. 46,480

Claims priority, application Austria, Jun. 14, 1978, 4326/78

Int. Cl.³ B22D *11/04*

U.S. Cl. 164—82 **14 Claims**



1. In a method of increasing and decreasing, respectively, the cross-sectional format of a continuously cast strand formed by a mould having oppositely arranged mould side walls, which method includes displacing at least one of these mould side walls relative to the oppositely arranged mould side wall and changing the inclination of said mould side wall, said mould side wall including an upper rim region and a lower rim region, the improvement which is characterized in that displacement of said at least one mould side wall is effected during casting, at a particular casting speed such that the strand is out of contact with the mould side wall closely below the casting level, by step-wise changing of its inclination in a manner so as to displace, in a first step, said lower rim region or said upper rim region, depending on whether the cross section is being increased or decreased, respectively, in a certain direction, i.e. outwardly or inwardly, respectively; and to displace, in a second step, the respective other rim region of said at least one mould side wall into the same direction.

4,270,594

METHOD AND APPARATUS FOR PRODUCING DIRECTIONALLY SOLIDIFYING CAST PIECES

Vasily A. Chumakov, ulitsa Belozerskaya, 3-a, kv. 58, Moscow, U.S.S.R.

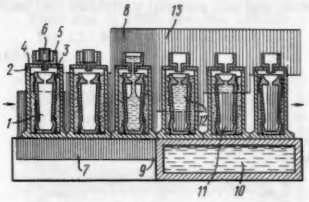
Filed Nov. 2, 1978, Ser. No. 956,842

Int. Cl.³ B22D *27/20, 25/06*

U.S. Cl. 164—127 **6 Claims**

1. A method for producing directionally solidifying cast pieces, comprising the steps of providing a bottom plate mould guide madeup of a heated section adjoining a cooled section, heating a foundry mould on said heated section to a temperature above the melting temperature of a metal, pouring the metal into the foundry mould cavity, moving the foundry mould with molten metal through a crystallization zone creating a heat front diminishing in the travelling direction of the foundry mould with metal, and subjecting the foundry mould with metal to complete cooling, wherein said foundry mould is

heated throughout its surface area inclusive of the base bottom portion thereof prior to pouring the metal into the foundry mould cavity, with said bottom portion of the foundry mould



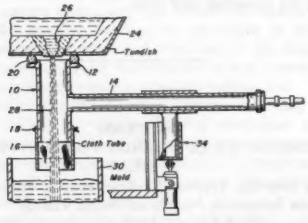
being brought into contact with said cooled section as soon as the foundry mould is fed to the crystallization zone with said diminishing heat front.

4,270,595

SHROUD WITH REPLACEABLE EXTENSION

Michael D. Coward, Murrells Inlet, S.C., assignor to Georgetown Steel Corporation, Georgetown, S.C.

Filed Sep. 8, 1978, Ser. No. 940,805
Int. Cl.³ B22D *11/10*
U.S. Cl. 164—415 **12 Claims**



1. In a shrouding apparatus for protecting a molten metal pouring stream between a bottom pour vessel nozzle and a hot metal receiving vessel, including a rigid first tubular member positionable between said nozzle and the top of said receiving vessel and adapted for a liquid pouring stream to pass therethrough, and means for supporting said first tubular member and holding it in an operative position beneath said nozzle and spaced above said receiving vessel, the improvement comprising:

a second tubular member removably attached to the exterior of the bottom of said first tubular member and extending downwardly therefrom into said receiving vessel, said second tubular member being a flexible, high-temperature heat-resistant, refractory cloth tube open at its lower end; and retaining means for holding said second tubular member in place on said rigid first tubular member.

4,270,596

TUBE MAT HEAT EXCHANGER

Michael F. Zinn; Steven E. Krulick, and Ronald W. Leonard, all of Spring Glen, N.Y., assignors to Bio-Energy Systems, Inc., Ellenville, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,728
Int. Cl.³ F28F *7/00*; F24J *3/02*
U.S. Cl. 165—1 **28 Claims**

1. In a heat exchanger wherein a plurality of parallel fluid-conducting tubes of elastomeric material are formed in an elongated mat with flexible webs connecting adjacent pairs of the tubes, pairing means for subsections of said mat comprising:

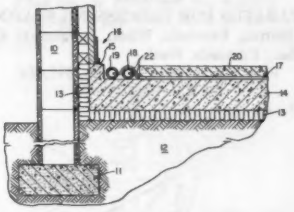
(a) a central mat section between said subsections being free of said webs between the tubes with the tubes remaining uninterrupted and integral;

(b) said subsections being arranged substantially coplanar with the free tubes of the central section;

(c) first and second hollow manifolds; and

(d) opposite end portions of all of the tubes remote from the central mat section being free of said webs and being connected to the respective hollow manifolds through respective holes in the manifold walls.

10. A method of installing a radiant heat exchanger in a building structure, said heat exchanger including a plurality of elongated mats of elastomeric material, each mat defining a



plurality of fluid-conducting tubes with flexible webs joining adjacent pairs of tubes, said tubes being connected to respective manifolds, comprising:

(a) removing said webs from between said tubes in a central section of the mat and leaving the tubes uninterrupted and integral;

(b) removing said webs from between said tubes at end portions of the mats for connection to the manifolds;

(c) locating said mats in place on the building structure so that subsections thereof to each side of the central section are substantially coplanar; and

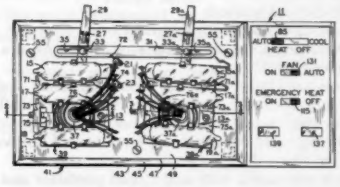
(d) covering said mats with a structural matrix.

4,270,597

THERMOSTAT AND CIRCUIT

Dann W. Denny, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 26, 1979, Ser. No. 15,053
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—27 **27 Claims**



2. A thermostat adapted for operation in a heating mode and a cooling mode so as to regulate the temperature of a space in which the thermostat may be located, the thermostat comprising:

a pair of means selectively movable to respective ones of adjusted positions and adapted for sensing the temperature of the space within a preselected temperature range, respectively;

a pair of sets of at least three switching means associated with said sensing means and conjointly movable therewith for operation between a pair of switching positions during the heating and cooling mode operation of the thermostat, respectively; and

at least three means disposed in heat transfer relation with one of said sensing means and energized in response to the

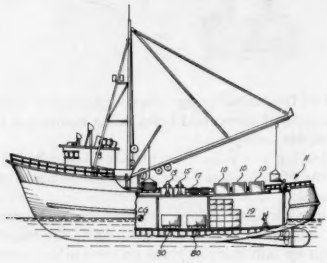
operation of said at least three switching means to one of said sets to one of the switching positions thereof for supplying anticipation heat to said one sensing means only during the heating mode operation of the thermostat, respectively, said at least three anticipation heat supplying means being respectively connected in series circuit relation with said at least three switch means and two of said at least three anticipation heat supplying means being connected in series circuit relation with each other with said two heat anticipation heat supplying means being connected in parallel circuit relation with another one of said at least three anticipation heat supplying means.

4,270,598

APPARATUS FOR PROCESSING SEAFOOD

Robert E. Britton, Edmonds, Wash., assignor to Cloudy and Britton, Inc., Edmonds, Wash.

Filed Feb. 6, 1978, Ser. No. 875,416
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—61 **11 Claims**



1. In a fishing vessel, an apparatus for processing of seafoods comprising:

a closed container having an opening and a fluid-tight closure to cover said opening;

means associated with said container for pressurizing said container to a predetermined level above atmospheric pressure

hot water reservoir means for storing cooking water;

means associated with said hot water reservoir means for maintaining the temperature of said cooking water at a predetermined level;

cold brine reservoir means for storing cold brine used to freeze said seafood;

means associated with said cold brine reservoir means for maintaining the temperature of said brine at a predetermined level;

means associated with said closed container and said hot water reservoir means for continuously circulating said cooking water from said hot water reservoir means through said container and back to said hot water reservoir means during a cooking cycle; and

means associated with said closed container and said cold brine reservoir means for continuously circulating said cold brine from said cold brine reservoir means through said container and back to said cold brine reservoir means during a freezing cycle.

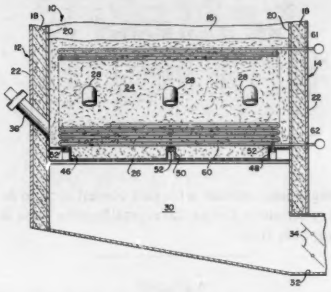
4,270,599

TUBE SUPPORT STRUCTURE FOR A FLUIDIZED BED HEAT EXCHANGER

John M. Connell, Mt. Lakes, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 29, 1978, Ser. No. 946,937
Int. Cl.³ F28D *13/00*
U.S. Cl. 165—104.16 **17 Claims**

1. A fluidized bed heat exchanger comprising a housing, a grid plate supported in said housing for receiving a bed of particulate material at least a portion of which is combustible, at least one perforated support pier means formed by bending portions of said grid plate and projecting out from the surface of said grid plate, means for passing air through said grid plate, said pier means and said material to fluidize said material, and



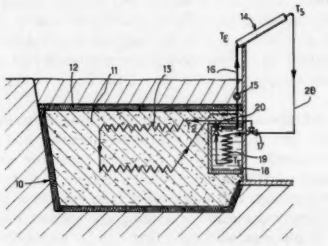
at least one heat exchange tube extending within said housing and supported by said pier means so that the air passing through said pier means also passes over said tube, said pier means including a support beam extending within said bent portions of said grid plate and having a flange projecting outwardly for receiving said tube.

4,270,600

ACCUMULATOR OF ENERGY FOR CONVERSION TO HEAT

Francis Bourdin, Tournan-En-Brie, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 15, 1979, Ser. No. 49,204
Claims priority, application France, Jun. 16, 1978, 78 18121
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—104.31 **3 Claims**



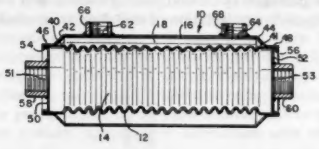
1. A storage for storing calorific energy, as may derive from a solar pickup including an insulating casing, a filling agent comprising at least partially a gel of an acrylic acid derivative base, heat-carrying fluid circuit means extending within said casing in thermal contact with said filling agent, said heat-carrying fluid circuit means comprising a primary circuit and a secondary circuit of conduits, one of which is for a heat-carrying fluid and the other of which is for a fluid to be heated, an auxiliary water storage, said heat-carrying fluid circuit means also in contact with water in said water storage, and valve means for circulating said heat-carrying fluid in said storage and/or auxiliary storage as a function of the respective temperatures of said heat-carrying fluid and said storages.

4,270,601

HEATER FOR PRE-HEATING FUEL WITH A HEATED LIQUID

Arthur Lancaster, Lafayette Hill, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jan. 7, 1980, Ser. No. 110,329
Int. Cl.³ F28D 7/10; F02M 31/00
U.S. Cl. 165—154 **3 Claims**



1. A pre-heater for heating fuel with a heated liquid comprising:

a. a corrugated tubing forming a first chamber to receive said heated liquid therethrough;

b. an outer cylinder forming a jacket around said corrugated tubing and connected towards the ends of said corrugated tubing to form a second chamber to receive said fuel therethrough:

c. inlet and outlet means connected to said corrugated tubing to pass said heated liquid therethrough.

d. second inlet and outlet means connected to said second chamber to pass said fuel therethrough:

e. said corrugated tubing and said cylindrical member each include flat circular overlapping extensions at the ends thereof secured together and extending to the outside of the pre-heater and away from the fuel in said chamber and the heating liquid in said corrugated tubing; and

f. enclosures having flat circular portions extending in the same directions as said overlapping extensions and secured within the extensions at the ends of said corrugated tubing, said enclosures having centrally disposed openings leading to said inlet and outlet means for passing said heated liquid therethrough;

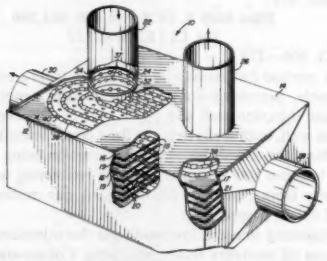
whereby heat from said heating liquid is transmitted through said corrugated tubing to heat said fuel in said chamber.

4,270,602

HEAT EXCHANGER

Berry W. Foster, Redondo Beach, Fla., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 30, 1978, Ser. No. 938,135
Int. Cl.³ F28D 9/00
U.S. Cl. 165—167 **23 Claims**



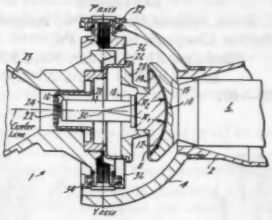
1. A heat exchanger comprising a plurality of plates each including spaced rows of semi-tubular channels with periodic recessed constrictions, said plates being connected in inverted pairs with their semi-tubular channels aligned to form tubular channels defining a first flow path for a first fluid; and a plurality of depressed dimples on each of said plates, said connected pairs of plates being arranged in stacked relation with said dimples on each plate supportively received within aligned ones of the recessed constrictions of an adjacent plate to space the connected pairs of plates from each other to form relatively open flow regions between said connected pairs of plates defining a second flow path for a second fluid.

4,270,603

NON-CONTACTING THERMAL ENERGY TRANSFER ASSEMBLY

Elias Reisman, Orange; David S. Goodsell, and Fred S. Masino, both of Costa Mesa, all of Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Dec. 6, 1978, Ser. No. 966,972
Int. Cl.³ F28F 7/00; F25B 21/02
U.S. Cl. 165—185 **16 Claims**



1. A heat transfer device including:

means for producing heat energy;

means for removing heat from said producing means and transferring said heat to a first heat conducting path element;

a heat sink mounted to receive said heat from said first heat conducting path element;

means for mounting said heat producing means, said removing means and said first heat conducting path element for movement and variable orientation with respect to said heat sink; and

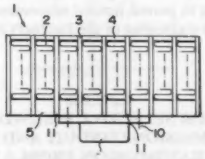
means for providing a continuous non-contacting low thermal resistivity path between said first heat conducting path element and said heat sink.

4,270,604

HEAT SINK

Masakazu Nakamura, Amagasaki, Japan, assignor to Sumitomo Precision Products Co. Ltd., Amagasaki, Japan

Filed Nov. 14, 1979, Ser. No. 94,096
Claims priority, application Japan, Nov. 17, 1978, 53/159302[U]
Int. Cl.³ H01L 23/36
U.S. Cl. 165—185 **5 Claims**



1. An improved heat sink comprising:

a plurality of corrugated fins having opposed edges;

a plurality of separator sheets having edges at opposite sides thereof, the edges of said sheets being spaced further apart than said edges of said fins,

said fins and said sheets being stacked in alternating relation-

ship with said edges of all said fins and all of said sheets on opposite sides of the stack and with the edges of each of the fins disposed inwardly of the stack relative to the edges of all of the sheets;

a plurality of side bars, each having opposed outer and inner edges, there being a respective side bar for each said edge of each fin, the inner edge of each bar being disposed in contacting relationship to the corresponding fin edge,

the outer edges of said bars and the edges of said sheets forming a flat, smooth surface on at least one of said opposite sides of said stack, said surface having a heat source mounted thereon; and

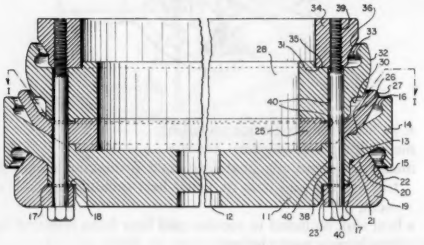
brazing means for interconnecting said fins, sheets and bars together for efficient heat conductivity.

4,270,605

BLADDER HOLDER ASSEMBLY FOR TIRE MAKING MACHINE

Kenneth C. Drew, Indiana County, Pa., assignor to McCreary Tire & Rubber Company, Indiana, Pa.

Filed Jan. 23, 1979, Ser. No. 5,923
Int. Cl.[3] B29H *17/16, 17/22*
U.S. Cl. 156—401 **7 Claims**



1. In an inner and outer bladder holder assembly for a tire making machine comprising an inner bladder bead ring and an outer bladder bead ring, a bladder spacing ring position between the inner and outer bladder bead rings, an inner bladder clamp ring positioned on the other side of the inner bladder bead ring, and an outer bladder clamp ring positioned on the other side of the outer bladder bead ring, the improvement comprising a plurality of detachable fasteners fastening all the said rings together into a unitary assembly, each fastener comprising a single fastener extending through all said rings and accessible for insertion and withdrawal from the outer bladder clamp ring, a second plurality of detachable fasteners fastening some, but not all of the rings together through holes therein into sub-assemblies, and dowel means positioning the outer bladder bead ring, the bladder spacing ring, the inner bladder bead ring and the inner bladder clamping ring only with respect to each other, those holes being counterbored so that the second plurality of detachable fasteners therein clear overlying rings, whereby the second plurality of detachable fasteners may be tightened to permit limited movement between adjoining rings prior to tightening of the fasteners extending through all rings.

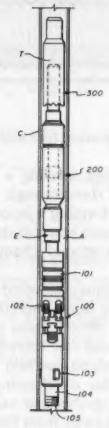
4,270,606

APPARATUS FOR SELECTIVE DISENGAGEMENT OF A FLUID TRANSMISSION CONDUIT AND FOR CONTROL OF FLUID TRANSMISSION FROM A WELL ZONE

David M. McStravick, Houston, and William M. Roberts, Deer Park, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Mar. 14, 1979, Ser. No. 20,306
Int. Cl.[3] E21B *33/129, 34/12*
U.S. Cl. 166—181 **50 Claims**

39. In an apparatus for the selective disengagement of a fluid transmission conduit insertable through a second conduit for communication to a zone within a well bore, and for control of fluid transmission from said zone upon disengagement of said fluid transmission conduit, including sealing means having a flow passageway communicating with the interior of said fluid transmission conduit and for isolating an annular area between said fluid transmission conduit and said second conduit and above said zone, and valve means having a flow passageway communicating with said fluid transmission conduit and with the flow passageway of said sealing means, said valve means being responsive to isolation of said fluid transmission conduit



to manipulate said valve means between open and closed positions to selectively isolate fluid flow through the passageway of said sealing means to said fluid transmission conduit, the improvement comprising: conduit disengaging means above said valve means and having a flow passageway communicating with and carriable by said fluid transmission conduit, said conduit disengaging means being responsive to rotation of said fluid transmission conduit after manipulation of said valve means to closed position to disengage said fluid transmission conduit.

4,270,607

EMULSION OIL RECOVERY PROCESS USABLE IN HIGH TEMPERATURE, HIGH SALINITY FORMATIONS

Ricardo L. Cardenas; Bobby G. Harnsberger, and Jim Maddox, Jr., all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 1, 1978, Ser. No. 901,386
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—273 **19 Claims**

1. A method for recovering petroleum from a subterranean, permeable, petroleum-containing formation penetrated by at least one injection well and by at least one spaced-apart production well, both wells being in fluid communication with the formation, the temperature of the formation being from about 70° F. to about 300° F., said formation containing water having a salinity from 30,000 to 220,000 parts per million total dissolved solids, comprising:

(1) injecting into the formation via the injection well a viscous oil recovery fluid comprising a phase-stable surfactant-containing emulsion comprising:

(a) a continous, saline aqueous phase containing

(1) from 0.5 to 5.0 percent by weight of a water soluble and/or dispersible alkylpolyalkoxyalkylene sulfonate or alkylarlypolyalkoxyalkylene sulfonate surfactant having the following formula:

$$RO(R'O)_xR''SO_3^-M^+$$

wherein R is an alkyl or alkylaryl group, linear or branched having from 8 to 24 carbon atoms in the alkyl chain, R′ is ethylene or a mixture of ethylene and propylene having relatively more ethylene than propylene, x is a number from 1 to 20, R″ is ethylene, propylene, hydroxypropylene or butylene, and M^+ is a monovalent cation;

(2) a phase stabilizing amount in the range of from 0.01 to 1.0 percent by weight of an organic sulfonate which is water soluble and/or dispersible, the concentration of organic sulfonate being from 1 to 30 percent of the concentration of the alkylpolyalkoxyalkylene sulfonate or alkylarylpolyalkoxyalkylene sulfonate, said organic sulfonate being selected from the group consisting of water soluble and/or dispersible sodium, potassium or ammonium salts of petroleum sulfonate whose mean equivalent weight is from 325 to 485, and water soluble alkyl or alkylaryl sulfonate salts having the following formula:

RSO_3M

wherein R and M have the same meaning as above; and

(3) said aqueous phase having a salinity from about 45 to 95 percent of the formation water salinity; and

(b) a dispersed hydrocarbon phase;

(2) thereafter injecting brine into the formation after the emulsion, the salinity of the brine being initially from 45 to 100 percent of the formation water salinity and decreasing the salinity of the brine to a value less than 1000 parts per million total dissolved solids over the time of injecting from 0.5 to 1.0 pore volume of brine, said emulsion and brine displacing petroleum through the formation toward the production well; and

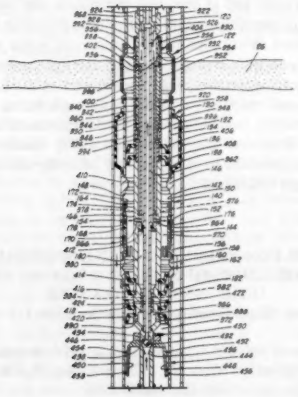
(3) recovering petroleum displaced by the emulsion and brine from the formation via the production well.

4,270,608

METHOD AND APPARATUS FOR GRAVEL PACKING MULTIPLE ZONES

James D. Hendrickson, Carrollton; Pat M. White, Lewisville; Odie R. S. Davis, Humble; Nolan M. Workman, Lewisville, all of Tex.; Eugene E. Baker, and David D. Szarka, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 27, 1979, Ser. No. 107,751
Int. Cl.[3] E21B *43/04, 43/10*
U.S. Cl. 166—278 **44 Claims**



1. Apparatus for circulating fluid to at least one formation in a well bore comprising:

seal means to isolate said at least one formation from said well bore above said at least one formation;

pipe means disposed in said well bore;

crossover means depending from said pipe means and adapted to direct fluid in one direction between said pipe means and fluid passage means depending from said crossover means, and further adapted to direct fluid in the opposite direction between said fluid passage means and the well bore adjacent said crossover means, said adjacent bore being separated from the well bore below said crossover by packer means, said fluid passage means adapted to carry fluid between said crossover means and said at least one formation in isolation from said well bore; and

circulation means in communication with said fluid passage means and adapted to circulate fluid from said fluid passage means in one direction to said at least one formation and back to said fluid passage means, and to receive fluid in the reverse direction from said fluid passage means and return it thereto without moving fluid in contact with said at least one formation.

36. A method of gravel-packing at least one zone pierced by a well bore, comprising:

circulating a gravel slurry from the surface to a level above said at least one zone;

circulating said gravel slurry from said level to said at least one zone;

depositing the gravel from said slurry across said at least one zone in the form of a pack and returning slurry-free fluid to said level above said at least one zone;

returning said slurry-free fluid to the surface;

reverse circulating a clean fluid from the surface to said level above at least said one zone, thence to a location proximate said at least one zone and back to said level above at least one zone, thence to the surface;

preventing fluid movement in the well bore below said level above said at least one zone except at said at least one zone during said circulating, said depositing and said returning; and

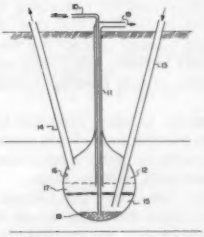
preventing fluid movement in the well bore below said level above said at least one zone during said reverse circulating.

4,270,609

TAR SAND EXTRACTION PROCESS

G. Lew Choules, 1095 S. McClelland St., Salt Lake City, Utah 84105

Filed Sep. 12, 1979, Ser. No. 74,868
Int. Cl.[2] E21B *43/24, 43/27;* C10G *1/00*
U.S. Cl. 166—303 **18 Claims**



1. A process for separating bitumen from bitumen containing formations comprising:

(a) contacting the bitumen containing formation with an aqueous solution containing an effective amount of a floating agent, an effective amount of a transfer agent and an effective amount of a strong monovalent base at an elevated temperature causing the bitumen to separate from inorganic materials contained in said formation and

(b) separating the bitumen from the solution.

17. A method for the in situ separation of bitumen from a tar sand deposit which comprises:

(a) injecting concurrently into the tar sand deposit steam and a heated aqueous solution containing effective amounts of (1) a floating agent, (2) a transfer agent and (3) a strong monovalent base

(b) causing said steam and aqueous solution to liquify a portion of the tar sand deposit forming an in situ chamber containing the aqueous solution in which bitumen separates from the tar sand in the aqueous solution and

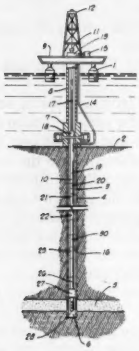
(c) separating bitumen from the aqueous solution.

4,270,610

ANNULUS PRESSURE OPERATED CLOSURE VALVE WITH IMPROVED POWER MANDREL

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 15, 1980, Ser. No. 112,210
Int. Cl.³ E21B *34/08*
U.S. Cl. 166—317 **54 Claims**



1. An apparatus for use in a well, comprising:

a cylindrical housing having an open bore therethrough, and a power port and a circulating port through the walls thereof;

a power mandrel in said open bore having an annular piston for moving said power mandrel in a first direction responsive to fluid pressure exterior of said cylindrical housing communicated to said annular piston through said power port;

frangible restraining means between said power mandrel and said cylindrical housing for restraining movement of said power mandrel in the first direction until the pressure exterior of said housing exceeds a predetermined value, and for frangibly releasing said power mandrel when said pressure exterior of said housing exceeds said predetermined value;

closure valve means in said cylindrical housing having a normally open position and a closed position for providing a flow passageway through the open bore in said housing when in the normally open position;

connecting means connecting said closure valve means to said power mandrel including means for moving said closure valve from the open position to a closed position responsive to movement of said power mandrel in the first direction;

first releasing means in said connecting means for selectively releasing said connecting means from said power mandrel after said power mandrel has moved a predetermined distance in the first direction;

circulation valve means in said housing having a normally closed position closing said circulating port and an open position opening said circulating port, said circulation valve means being adapted for movement from the closed position to the open position in response to movement of said power mandrel in the first direction; and

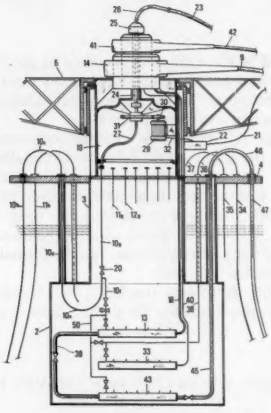
interior pressure balance means for balancing an interior pressure of said open bore, and a longitudinal force caused thereby, across said frangible restraining means to prevent longitudinal loading of said frangible restraining means due to said interior pressure.

4,270,611

MOORING STATION AND TRANSFER TERMINAL FOR OFFSHORE HYDROCARBON PRODUCTION

Marcel Arnaudeau, and Pietrus Verschure, both of Paris, France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 2, 1979, Ser. No. 618
Claims priority, application France, Dec. 30, 1977, 77 39849
Int. Cl.³ E21B *7/12*
U.S. Cl. 166—344 **12 Claims**



12. A mooring station and transfer terminal for the production of hydrocarbons from a plurality of offshore underwater wells, said mooring station and transfer terminal comprising a watertight caisson, a rotatable arm above said watertight caisson, said arm supporting at least one loading pipe, said watertight caisson housing at least one production manifold means connecting said plurality of underwater wells to said at least one loading pipe, and at least one circulation and safety manifold means connecting said plurality of underwater wells to a circulation and safety pipe means supported at the water surface by said rotatable arm above said watertight caisson, said at least one production manifold means and said at least one circulation and safety manifold means each being equipped with valve means, said at least one production manifold means, and said at least one circulation and safety manifold means each being connected to said plurality of underwater offshore wells through individual flexible pipelines.

4,270,612

METHOD FOR PREVENTING THE SPONTANEOUS COMBUSTION OF STORED ORGANIC AND INORGANIC SUBSTANCES

Carl Larsson, Kisa, Sweden, assignor to Kisa Tra AB, Kisa, Sweden

Continuation of Ser. No. 719,928, Sep. 2, 1976, abandoned. This application Mar. 26, 1979, Ser. No. 24,176
Int. Cl.³ A62C *2/00*
U.S. Cl. 169—45 **16 Claims**

1. A method for controlling conditions within the interior of a stack of combustible solid materials so as to prevent sponta-

neous combustion of said materials, said method comprising the steps of:

(1) sensing the temperature of selected areas within said stack; and

(2) injecting a control medium into those of said selected areas of said stock in which temperature falls without a preselected temperature range so as to modify the environment within said selected areas, said control medium being injection into selected areas in said stack via at least

one delivery tube means inserted into said stack, said tube means (a) being divided into a number of axially separated chambers, and (b) having a number of exit orifices over at least part of its length which communicate with respective of said chambers and including pipe means connecting each of said chambers to a source of said control medium, and a valve means associated with each chamber of said delivery tube means, and including the step of controlling said valve means whereby to feed said control medium into said selected areas in said stack.

4,270,613

FIRE AND EXPLOSION DETECTION AND SUPPRESSION SYSTEM

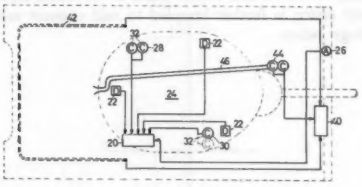
Dov Spector, 36 Har Dafna St., Savion, and Yechiel Spector, 5 Avner St., Zahala - Tel-Aviv, both of Israel

Filed May 3, 1978, Ser. No. 902,608

Claims priority, application Israel, Feb. 27, 1978, 54138

Int. Cl.³ A62C *37/18*

U.S. Cl. 169—61 **11 Claims**



1. A fire and explosion suppression system, comprising:

a first detector for sensing ultraviolet radiation in a volume to be protected excluding radiation in the visible spectrum and providing an output indication I in response to receipt of such radiation;

a second detector for sensing infrared radiation in said volume to be protected excluding radiation in the visible spectrum and providing an output indication II in response to receipt of such radiation;

logic means for ANDing said output indications I and II and providing an output indication III of simultaneous receipt of radiation by said first and second detectors;

extinguishing agent distribution means operative for discharging an extinguishing agent into said volume to be protected in response to an actuation indication; and

actuation means operative in response to said output indication III for providing said actuation indication to said distribution means;

said system being operative for suppressing an explosion within 100 milliseconds of the existence of a high energy ignition and within 200 milliseconds of the existence of a low energy ignition, and

wherein said actuation means also receives an indication of the pressurized state of various elements of the extinguishing agent distribution means and a confirmation of the discharge thereof, and wherein said actuation means is operative in response to said indication and confirmation to actuate additional elements of said extinguishing agent distribution means when certain ones thereof are not properly pressurized or fail to discharge.

4,270,614

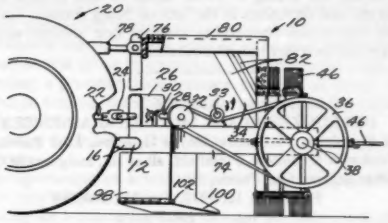
STONE RAKE AND GROUND CONDITIONING MACHINE

James W. Judy, Box 236, Middletown, Va. 22645

Filed Dec. 16, 1977, Ser. No. 861,367

Int. Cl.³ A01B *43/00*

U.S. Cl. 171—63 **31 Claims**



1. A combination stone rake and ground conditioning machine comprising:

(a) a frame, said frame having at least two out-wardly extending arms and means adapted for mounting said frame on a tracter hitch which provides means for vertical adjustment of said frame in relation to the ground;

(b) a rotary member rotatably mounted and supported by said at least two outwardly extending arms disposed on said frame;

(c) three or more plates circumferentially spaced and extending along the axial length of said rotary member;

(d) a plurality of resilient tines mounted on said three or more plates disposed on said rotary member to provide in operation a penetration of the ground of about ½ of an inch to about 3 inches; and

(e) a slip clutch drive means for rotating said rotary member which in combination with said three of more plates, said rotary member and said resilient tines provide a resilient raking and ground conditioning action which removes small stones while conditioning the ground for planting.

4,270,615

SOIL CULTIVATING DEVICES

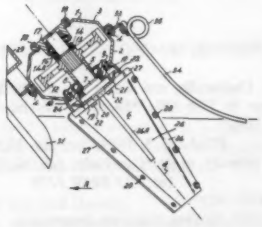
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Nov. 24, 1978, Ser. No. 963,175

Claims priority, application Netherlands, Nov. 30, 1977, 7713196; Nov. 30, 1977, 7713197

Int. Cl.³ A01B *33/06*

U.S. Cl. 172—49 **13 Claims**



1. A soil cultivating device comprising a frame and a plural-

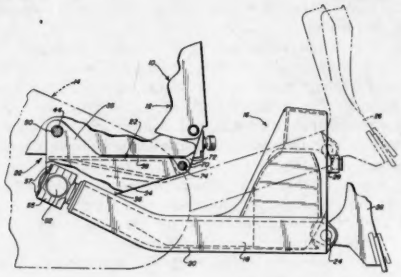
ity of rotatable plough bodies journalled for rotation on said frame, said bodies being arranged in a row that extends transverse to the direction of travel and driving means connected to rotate neighboring bodies in relative opposite directions, each body being mounted for rotation about an axis that extends forwardly and upwardly at an inclined angle with respect to the normal direction of travel, said body comprising an elongated downwardly tapering support member having a longitudinal axis which co-extends with the rotary axis thereof, said support member having a generally flat central part with angled side edge parts, each side part extending straight and at an angle substantially less than 90° with respect to the plane of said central part, which extends beyond said support member, said side parts mounting soil cutting blades that extend substantially along the entire length of the side parts, whereby lumps of soil are cut during rotation, raised by said plough bodies, inverted and deposited in the furrow being formed, said side parts and blades converging towards one another and said center line in a downward direction.

4,270,616

BULLDOZER BLADE MOUNTING ASSEMBLY

Carl P. Adams, Metamora; Royce D. Allen, East Peoria, and Frederick L. Kokaly, Plainfield, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 10, 1978, Ser. No. 949,589
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—811 **9 Claims**



1. A mounting assembly for mounting a bulldozer blade **(26)** to a tractor frame **(12)**, a C-frame **(18)** connected to said bulldozer blade and having arms **(20,20)** extending rearward therefrom, a pair of mounting brackets **(30,30, 130,130)**, means **(32,132)** below said tractor frame **(12)** for interconnecting said brackets **(30,30, 130,130)**, an upper portion **(35,37, 135,137)** of each bracket **(30,130)** being pinned **(50,150)** to said tractor frame, a sidewardly extending trunnion **(52,152)** mounted on a lower portion of each bracket, means **(55,155)** for pivotally connecting the arms **(20,20)** of said C-frame **(18)** to said trunnions **(52,152)**, and means **(74,186)** lying in a plane transverse to a longitudinal axis of the tractor frame for supporting a remote portion **(60,162)** of each bracket on said tractor frame to permit fore and aft movement of said bracket relative to said tractor frame without applying shear forces therebetween.

4,270,617

EARTH MOVING MACHINE OF THE SCRAPING BLADE TYPE

Bruno G. Cantarella, and Carlo Cecchi, both of Turin, Italy, assignors to Fiat-Allis Macchine Movimento Terra S.p.A., Lecce, Italy

Filed Jul. 5, 1979, Ser. No. 54,965
Claims priority, application Italy, Jul. 10, 1978, 68322 A/78
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—821 **9 Claims**

1. An earth moving machine comprising

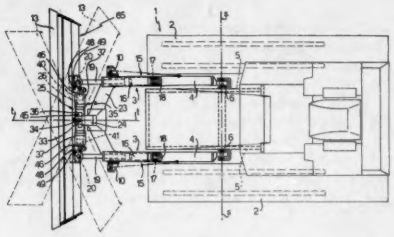
frame means supporting a scraping blade,

said scraping blade being coupled to said frame means by mounting means for movement about a first axis normal to the longitudinal axis of the machine,

second support means coupling the scraping blade to the frame means for movement about a second axis extending vertically and normal to the first axis,

hydraulic means coupled to the frame means and the scraping blade to effect selective rotation of the scraping blade about said first and second axis,

hydraulic actuator means further coupling the scraper blade to the frame means to transmit at least part of the forces applied to the scraping blade during operation to the frame means and to permit rotation of the scraping blade about a third axis normal to said first and second axis,



said hydraulic actuator including a chamber member and a piston member movable in an axial horizontal direction therein in response to the application of fluid pressure applied thereto,

said scraping blade being rigidly coupled to said chamber member,

said frame means including support means projecting vertically upward from said frame means and disposed substantially in the vertical center plane of the frame means, and said piston is further coupled to said support means by hinge means.

4,270,618

EARTH BORING APPARATUS

Lloyd J. Owens, Kirkland, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Apr. 20, 1979, Ser. No. 31,856
Int. Cl.³ E21B *10/26, 17/10*
U.S. Cl. 175—57 **20 Claims**

17. A method of forming a large diameter bore hole in the ground with a stabilizer frame connected to the lower end of a powered drill string, comprising the steps of:

connecting a blind bore forming cutterhead to the stabilizer frame;

rotating and advancing the stabilizer frame and attached cutterhead to form a blind bore of a desired length;

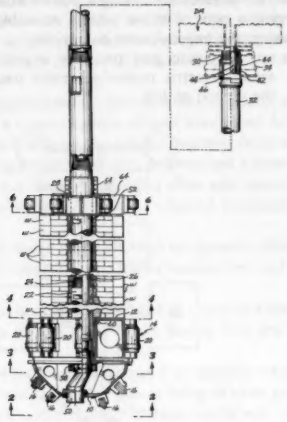
retracting the stabilizer frame and attached cutterhead;

forming an enlarged cavity at the end of the blind bore;

removing the cutterhead from the stabilizer frame and replacing the cutterhead with an adjustable diameter reamer;

advancing the stabilizer frame and attached reamer to the end of the bore hole;

expanding the reamer within the enlarged cavity at the end of the bore hole; and



simultaneously rotating and retracting the stabilizer frame and attached reamer to form a larger diameter hole.

4,270,619

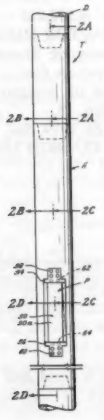
DOWNHOLE STABILIZING TOOL WITH ACTUATOR ASSEMBLY AND METHOD FOR USING SAME

Jimmy D. Base, Rt. 1, Box 40M, Stillwater, Okla. 74074

Filed Oct. 3, 1979, Ser. No. 81,547

Int. Cl.[3] E21B *7/08*

U.S. Cl. 175—61 **49 Claims**



1. A downhole stabilizing tool for directional drilling and adapted to be used with a fluid conductive drill string in a borehole, comprising:

a tool housing adapted to be connected with the fluid conductive drill string and in fluid communication therewith, said tool housing formed having a tool housing bore therein;

a sleeve assembly mounted for movement within said tool housing bore for movement between selected positions, said sleeve assembly formed having camming means therewith;

stabilization pad means mounted with said tool housing for selective movement laterally of said tool housing for engagement with the borehole, said stabilization pad means having cam engaging means therewith for engaging said camming means of said sleeve assembly for moving said stabilization pad means radially in response to movement of said sleeve assembly between said selected positions;

pawl means mounted with said tool housing bore and adapted to cooperate with said sleeve assembly for limiting movement of said sleeve assembly to said selected positions; and,

pawl engaging means with said sleeve assembly for engaging said pawl means for limiting movement of said sleeve assembly to said selected positions.

43. A method for actuating plural stabilization pads of a downhole stabilizing tool for moving the stabilization pads between preselected lateral positions for directional drilling, the downhole stabilizing tool adapted to be used with a fluid conductive drill string in a borehole, comprising the steps of:

selecting a predetermined distance between an upper end and an actuator detent of a sleeve assembly of the stabilizing tool;

mounting the stabilizing tool with the fluid conductive drill string;

preprogramming an actuator assembly to correspond with the predetermined distance of said selecting;

running the actuator assembly through the fluid conductive string adjacent to the stabilizing tool;

selectively engaging the stabilizing tool with the actuator assembly as a result of said preprogramming; and

expanding by fluid pressure action the stabilization pads of the stabilizing tool outwardly into the borehole after said selectively engaging.

4,270,620

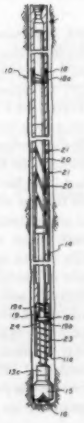
CONSTANT BOTTOM CONTACT TOOL

James D. Lawrence, Conroe, Tex., assignor to Dailey Oil Tools, Inc., Houston, Tex.

Filed Jan. 12, 1979, Ser. No. 3,045

Int. Cl.[3] E21B *17/07*

U.S. Cl. 175—322 **8 Claims**



1. An arrangement for urging a drill bit on a drill string into substantially constant contact with a well bore bottom as it is rotated in drilling the well bore comprising:

(a) a mandrel;

(b) a drill bit on one end thereof;

(c) cooperating means supporting said mandrel telescopically within the lower end of the drill string whereby rotation of the drill string may be imparted to said mandrel and drill bit thereon while accommodating relative rota-

tion and longitudinal movement between said mandrel and the drill string, said cooperating means including:

left hand helical groove means extending longitudinally on said mandrel;

roller means supported on the drill string and engaged in said helical groove means; and spring means abutting the drill string at one end and said mandrel at the other end to tend to extend said mandrel longitudinally out of the drill string and into engagement with the well bore bottom.

4,270,621

ARTICULATED TRACTOR POWERED BY TANDEM ENGINES

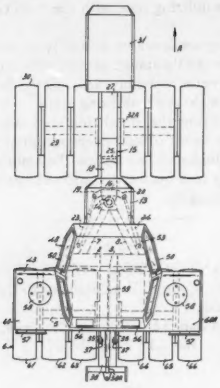
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Division of Ser. No. 703,652, Jul. 8, 1976, Pat. No. 4,181,315. This application Jan. 17, 1979, Ser. No. 4,188

Claims priority, application Netherlands, Jul. 8, 1975, 7508091

Int. Cl.³ B60K *15/08, 5/08*

U.S. Cl. 180—54 C **18 Claims**



1. A tractor for extended agricultural operations at sites remote from sources for refueling which comprises a frame, at least one engine carried by said frame, ground engaging wheels mounted to extend outwardly on opposite sides of said frame to support said frame from a front axle and rear axle connected to said frame, said ground engaging wheels being mounted on said rear axle in a row, at least a portion of said ground engaging wheels operatively connected to said engine, at least one high volumetric capacity fuel tank having a width transverse to the longitudinal axis of the tractor substantially greater than its length parallel to said axis and extending outwardly on each of its lateral sides beyond said frame, at least part of said fuel tank being disposed vertically above said row of said ground engaging wheels on each side of said frame provided to support said tractor frame, a driver's seat arranged immediately above the top of said fuel tank, and a lifting device mounted on said frame to extend to the rear of said tractor from between said ground engaging wheels of said row, the relationship between said driver's seat and said lifting device being such that an operator in said driver's seat is provided with a substantially unobstructed view of implements mounted on said lifting device.

4,270,622

DRIVE AXLE FOR ELECTRIC VEHICLE

James M. Travis, 3704 Oakshire, Pontiac, Mich. 48054

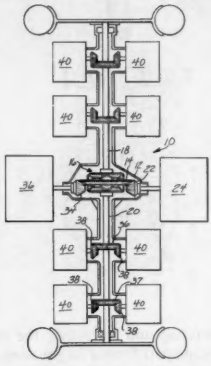
Filed Jun. 27, 1979, Ser. No. 52,626

Int. Cl.³ B60K *1/00*

U.S. Cl. 180—65 C **4 Claims**

1. In an electric powered vehicle of the type having a battery power source, a first electric motor, a drive axle rotatably driven by the motor, a housing, a ring gear, a first pinion gear for rotating the ring gear, and a differential carried by the ring gear, the differential driving a pair of axle shafts for rotatably driving a pair of drive wheels rotatably supported by the housing, the improvement comprising:

a second pinion gear rotatably engaging the ring gear, a second electric motor/generator rotatably connected to the second pinion;



a bevel gear affixed to one of the axle shafts for rotation therewith;

a pair of opposed bevel gears rotatably engaging the bevel gear; and

a third and fourth electric motor generator supported by the housing and rotatably connected to the opposed bevel gears for rotation therewith.

4,270,623

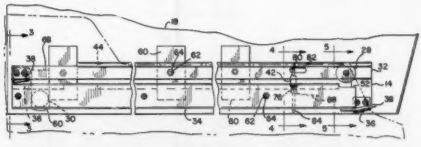
TRACTOR HOOD

Michael C. Brandl, Westmont; David T. Kataoka, Berwyn; Jagdish C. Khanna, Downers Grove, and Frank J. Zwettler, Jr., Bollingbrook, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,050

Int. Cl.³ B62D *25/10*

U.S. Cl. 180—69 R **4 Claims**



1. In a tractor having a hood and frame with a latch to establish a closed position of said hood, the improvement, including in combination:

at least two frame tracks secured to opposite sides of said frame;

at least two hood tracks secured to opposite sides of said hood;

at least two hood guides secured to opposite sides of said hood, said hood guides engaged with and movable on said frame tracks;

at least two frame guides secured to opposite sides of said frame and located at opposite ends of said hood from said hood guides when said hood is in said closed position, said frame guides engaged with and movable on said hood tracks; and

a first set of at least two ramps secured to said hood and a second set of at least two ramps secured to said frame, said

second set slideably engaging said first set when said hood is in said closed position to automatically rigidly connect said hood to said frame by increasing the engaging force transmitted between said guides and said tracks, with one ramp from each set of said ramps in close horizontal proximity to each of said guides when said hood is in said closed position.

3. In a ground supported tractor having a hood, a frame, and a latch to establish a close position of said hood, said hood being sequencially movable by the tractor operator from said closed position through a primary open position and a secondary open position to a removed position after said operator disengages said latch, the improvement including, in combination:

at least one pair of frame tracks secured to opposite sides of said frame, each of said frame tracks having fore and aft ends;

at least one pair of hood tracks secured to opposite sides of said hood, each of said hood tracks having fore and aft ends;

at least one pair of frame guides secured to opposite sides of said frame, each of said frame guides being in close proximity to said fore end of one of said frame tracks and being engaged with and movable on said hood tracks;

at least one pair of hood guides secured to opposite sides of said hood, each of said hood guides being in close proximity to said aft end of one of said hood tracks and being engaged with and movable on said frame tracks;

a pair of cutouts in each of said hood and frame tracks, said cutouts sized to allow passage of the guide engaging said one track;

one of a stop and a detent in one of said hood tracks and said frame tracks, the other of said frame tracks and said hood tracks includes the remainder of said stop and said detent, said stop located forward of said frame guide when said stop is on said frame track and located rearward of said hood guide when said stop is on said hood track, and said detent located rearward of said frame guide when said detent is on said frame track and located forward of said hood guide when said detent is on said hood track;

one of said frame guides and said hood guides establishes one of said primary open and said secondary open position, the remainder of said primary open position and said secondary open position being established by the other of said frame guides and said hood guides, and said removed position being established by said ground supporting said hood;

said primary open position being established by said hood and track guides supporting said hood and said one guide engaging said detent;

said secondary open position being established by said other guide contacting said stop, said engaging guide aligning with said pair of cutouts in one of said hood guides or frame guides and said operator pivoting said hood about said engaging guide until said hood contacts said ground;

said removed position being established by said operator pivoting said hood about said ground engagement, passing said engaging guide through said pair of cutouts in said other of said hood guides or frame guides until said hood is fully supported by said ground; and

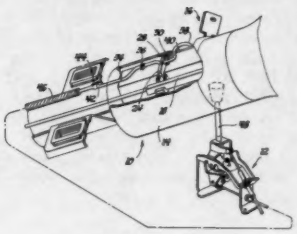
said frame guides, said hood guides, said frame tracks, said hood tracks and said ground thereby cooperate to support the majority of the weight of said hood in each and during the movement between each of said positions, whereby said operator primarily supplies a horizontal motor force for said hood movement and only a minor portion of said hood weight during said hood movement.

4,270,624

STEERING COLUMN LOCK INHIBITOR FOR A FLOOR MOUNTED TRANSMISSION CONTROL

Michael E. Jessop, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 11, 1979, Ser. No. 56,776
Int. Cl.³ B60R *25/02*
U.S. Cl. 180—287 **3 Claims**



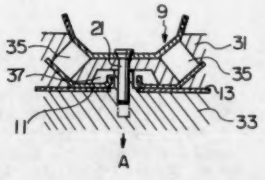
1. A steering column lock inhibitor for use in a vehicle having a floor mounted transmission shift mechanism movable to a "Park" position, and an ignition lock mechanism movable to a "Lock" position said lock inhibitor comprising; a rack gear linearly movable by said ignition lock mechanism and having a recess formed therein; a manual rod guided in the steering column for manual linear movement to a locking position; a pawl member responsive to the linear movement of said manual rod and being moved thereby transversely to said rack gear into said recess so that said lock mechanism cannot be moved to the "Lock" position unless said manual rod has been moved to the locking position; means for removing said pawl member from said recess when said lock mechanism is moved to said "Lock" position; and a drive transmitting means operatively connected between the floor mounted transmission shift mechanism and said manual rod for preventing said manual rod from being moved to said locking position until said transmission shift mechanism is moved to the "Park" position.

4,270,625

ENGINE MOUNT FOR A VEHICLE

Yutaka Nishimura, and Kazuyuki Gamano, both of Okazaki, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 21, 1979, Ser. No. 50,560
Claims priority, application Japan, Mar. 12, 1979, 54-30354[U]
Int. Cl.³ B60L *5/02*
U.S. Cl. 180—291 **1 Claim**



1. A device for mounting a longitudinally extending rear extension portion of an engine to a transversely extending rear support member of a vehicle body, said device comprising:

a transversely extending first plate member arranged along the lower surface of said rear extension portion, said first plate member being fixedly connected to said rear extension portion,

a transversely extending second plate member arranged below said first plate member, said second plate member being provided with means for fixedly connecting said second plate member to said rear support member, said second plate member defining at the center thereof an opening, a pair of first elastic members arranged on each side of said opening for elastically connecting said first plate member to said second plate member,

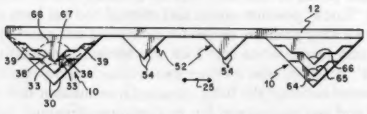
a second elastic member of a substantially tubular shape, in which an inner edge of said opening of said second plate member is located, the upper surface of said second elastic member being spaced from the lower surface of said first plate member, and a stopper rod which is on the upper end thereof fixedly connected to said first plate member, said stopper rod having a straight longitudinally extending bottom end extended out from said second elastic member, said inner edge of said opening which is located in said second elastic member having an upwardly directed lip portion.

4,270,626

COUPLING MEANS FOR HORIZONTAL VIBRATOR

William C. Pritchett, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1979, Ser. No. 108,206
Int. Cl.[3] G01V *1/047*
U.S. Cl. 181—113 **6 Claims**



1. In a transducer for inducing shear waves in an elastic medium including a horizontally movable support means adapted to couple the energy of a transducer into said medium, the improvement comprising a plurality of inverted, wedge-shaped cleat means depending from said support means for engaging the surface of said medium, each of said cleat means having a pair of lateral surfaces downwardly convergent from said support means to form a cleat edge adapted to extend horizontally and transversely to the direction of horizontal transducer motion, the lateral surfaces of at least some of said cleat means consisting of interspersed sloping and horizontal faces.

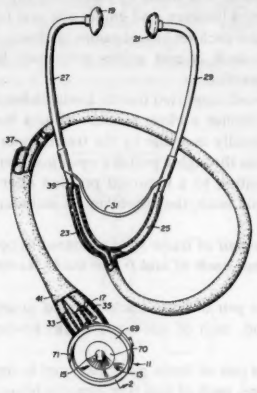
4,270,627

STETHOSCOPE WITH PROBE SOUND PICK-UP AND RESONANT CAVITY AMPLIFICATION

Raymond R. Hill, 300 Diogenes Dr., Angwin, Calif. 94508

Filed Jul. 2, 1979, Ser. No. 53,924
Int. Cl.[3] A61B *7/02;* **H04R** *25/00*
U.S. Cl. 181—131 **24 Claims**

1. In a stethoscope having a sound pick-up head and at least one ear piece that are connected at opposite ends of an enclosed sound transmission passage therebetween, the improvement comprising an elongated resonant cavity of a given volume connected at one end to said enclosed sound transmission passage in the vicinity of said pick-up head and opened to the atmosphere at its other end, thereby allowing sound waves from said pick-up head to simultaneously pass through both the resonant cavity and the enclosed passage, whereby said resonant cavity causes sound frequencies within a given resonant



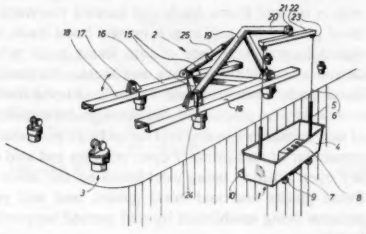
frequency range to be amplified between the pick-up head and said ear piece.

4,270,628

ELEVATOR DEVICE PREFERABLY AN ELEVATOR FOR BUILDING FACADES

Leif Anderson, Bögatan 39 A, S-412 72 Göteborg, Sweden

Filed Mar. 23, 1978, Ser. No. 889,538
Claims priority, application Sweden, Mar. 25, 1977, 7703425
Int. Cl.[3] E04G *3/10*
U.S. Cl. 187—6 **4 Claims**



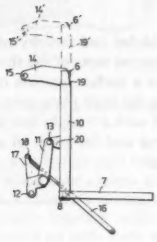
1. In an elevator device having a lifting arm carried by trolley means displaceable along support means provided on an elevated foundation such as a building roof to displace a lift in the vertical and horizontal directions, the improvement comprising at least three independent support elements arranged respectively, in at least two generally parallel rows and parallel to a face of the building, the support elements of each row being disposed at a predetermined maximum spacing from each other, said trolley means being provided with rail means corresponding in number of said rows and being of a length corresponding at least to twice said maximum spacing of each respective row, said rail means being arranged to be supported by the respective support elements in a displaceable manner so that when the trolley is moved along said support elements the distance between a pair of adjacent support elements of each row is bridged by the respective rail means, and in which the rail means on the trolley is provided with outer portions which can be pivoted upwardly and serve the purpose of reducing space for the trolley, and the support elements of each row are spaced from one another respectively by a distance smaller than said maximum spacing and at most corresponding to one

half of the distance between the end of the remaining operative portion of the corresponding rail means after the outer portions have been pivoted upwardly, whereby the need for a generally continuous track on said foundation is avoided.

4,270,629
LINKAGE SYSTEM FOR LOAD-LIFTING ARRANGEMENTS

Karl T. Bergling, Körsbärsvägen 4 A, Stockholm, Sweden S-114 23

Filed Mar. 22, 1979, Ser. No. 22,850
Claims priority, application Sweden, Apr. 4, 1978, 7803807
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 E **7 Claims**



1. A linkage system for load-lifting arrangements comprising a frame and a link whose one end is pivotally connected to a link arm at a location between one end of the link arm and the other end of said link arm and whose other end is pivotally connected to the frame, said one end of the link arm being provided with load-carrying means and said other end being journalled in a guide which is arranged to guide said other end of the link arm substantially linearly and horizontally during a lifting or lowering operation, characterized by a lifting means comprising at least one linear motor which is connected between the frame and an intermediate point on the link and is arranged to cause the link to rotate about its bearing on the frame so as to enable during a lifting or lowering operation, the end of the link arm having the load-carrying means to be moved vertically from a height position below said guide to a height position above said guide, or vice versa, whilst simultaneously moving the end of the link arm which is mounted in the guide substantially horizontally, said linkage system comprising part of a vehicle-carried lifting arrangement comprising two parallel operating systems one on each side of the vehicle, characterized in that the other end of the link is pivotally mounted on the vehicle, and in that the lifting means acts between the frame of the vehicle and the link.

4,270,630
AUTOMATIC LIFT ASSEMBLY

Lawrence E. Karkau, Lansing, Mich., assignor to Collins Industries, Inc., Hutchinson, Kans.

Continuation-in-part of Ser. No. 855,288, Nov. 28, 1977, Pat. No. 4,164,292. This application Aug. 1, 1979, Ser. No. 62,788
Int. Cl.³ B66B *9/20*; B62B *1/06*
U.S. Cl. 187—9 R **3 Claims**

1. In an improved automatic lift assembly for use in vehicle or building doorways comprising:

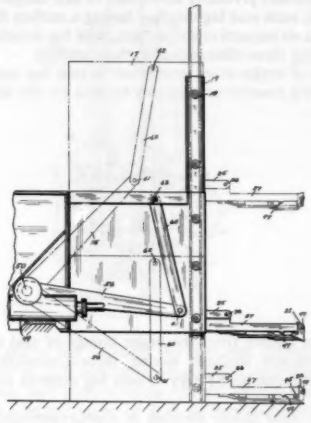
a lift carriage movably positioned within a doorway opening, said lift carriage having a substantially U-shaped configuration wherein the base of the lift carriage is adapted to form a lower step portion;

a movable upper step pivotally positioned within said lift carriage in a normally retracted stowed step use position above and to the rear of said lower step portion, said upper step selectively extendable forwardly and downwardly so as to form a co-planar platform extension of said lower step portion;

a movable riser provided in pivotal engagement with said upper step so as to selectively extend downwardly to said lower step portion when said upper step is in its retracted stowed step use position within the lift carriage, said riser selectively extendable upwardly and outwardly to form a loading ramp extension from said extended upper step;

upper step and riser actuating means to selectively extend said upper step forwardly and downwardly so as to form a co-planar platform extension of said lower step portion and to selectively pivotally extend said riser upwardly and outwardly to form a loading ramp extension from said extended upper step;

lift carriage actuating means to selectively lower said lift carriage to a lowered ground level position and to selectively raise said lift carriage to a raised interior floor level position;



a safety guard barrier plate provided in pivotal engagement with said movable riser, said safety guard barrier plate adapted to storably retract against said riser along the outer longitudinal edge portion thereof, said safety guard barrier plate selectively extendable to a substantially vertical safety guard position along the outer longitudinal edge of said riser when said riser is actuated to form a horizontal co-planar platform extension of said lower step and movable extended upper step; and

riser and safety barrier guard plate actuating means in association with said riser and said barrier guard plate so as to automatically raise said safety guard barrier plate to its vertical safety guard position in response to moving said riser to form a horizontal co-planar extension of said lower and upper steps.

4,270,631
MODULAR CALIPER BRAKE ASSEMBLY

Jacob Kobelt, 6110 Oak St., Vancouver, B. C., Canada (V6M 2W2)

Filed Feb. 13, 1979, Ser. No. 11,872
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—72.9 **9 Claims**

1. A modular caliper brake assembly, comprising:

a pair of generally similar one-piece yoke elements, each said yoke element having a body portion with a pair of oppositely disposed faces and a pair of yoke arms extending in a similar direction from said body portion, each said yoke arm being disposed oppositely to a corresponding yoke arm of the other of said yoke elements;

a one-piece spacer element having a pair of oppositely dis-

posed faces, each said spacer element face being adapted to cooperate with one of said yoke element faces with said spacer element sandwiched between said pair of yoke elements;

a one-piece mounting element cooperating with at least one of said yoke elements and said spacer element for mounting to said brake assembly;

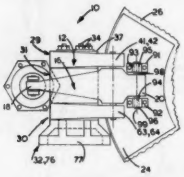
brake body securing means cooperating with said yoke elements, said spacer element and said mounting element for holding said elements together, said elements thereby forming a modular brake body having a plurality of discreet one-piece separable elements;

a pair of caliper arms having inner ends and outer ends, said yoke arms having journalling means for journalling said caliper arms;

an actuator cooperating with said inner ends of said caliper arms;

lug members pivotably connected to said caliper arm outer ends, each said lug member having a surface facing away from its respective caliper arm, said lug member surfaces having three-dimensional surface profiles;

a pair of brake shoes connected to said lug members and having connection surfaces located on the sides of said



shoes remote from the brake linings of said shoes, said connection surfaces having three-dimensional surface profiles complementary to said lug member surface profiles;

a brake shoe spacer member of a predetermined thickness positioned between each said lug member and its respective brake shoe for adjusting the distance between each said lug member and its respective brake shoe to accommodate a brake disc of a particular thickness, each said brake shoe spacer member having a first surface with a three-dimensional surface profile complementary to its respective lug member surface profile for interengaging said lug member surface and for thereby engaging said brake shoe spacer member and its respective lug member in interlocking relationship, said brake shoe spacer member also having a second surface opposite said first surface with a three-dimensional surface profile complementary to its respective brake shoe connection surface profile for interengaging said brake shoe connection surface and for thereby engaging said brake shoe spacer member and its respective brake shoe in interlocking relationship; and,

lug securing means for holding together each said lug member and its respective brake shoe and brake shoe spacer member.

4,270,632

INTERNAL SHOE DRUM BRAKES

Albert Langert, Neuwied, Fed. Rep. of Germany, assignor to Girling Limited, Birmingham, United Kingdom

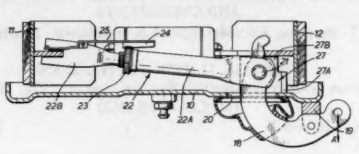
Filed Jan. 30, 1979, Ser. No. 7,836

Claims priority, application United Kingdom, Feb. 1, 1978, 3993/78

Int. Cl.[3] **F16D** *65/56*

U.S. Cl. 188—79.5 P **7 Claims**

1. An internal shoe drum brake comprising a pair of brake shoes, an adjustable length strut extending between the shoes and having a ratchet, movement of which adjusts the length of the strut, a cross-pull actuating lever pivotally connected to one end of the strut and engaging one shoe, the lever being so arranged that a cross-pull force acting on one end thereof in a direction generally parallel to the drum axis rotates said lever to exert a force on said one shoe and a reaction force through the intermediary of said strut and an abutting engagement thereof with said other shoe to urge said shoes apart, and a pawl engageable with said ratchet, said pawl being pivotally mounted on said other shoe and being rotatable about said



pivot to move the ratchet and thereby adjust the length of the strut when there is excess wear of the shoes, wherein a portion of said strut engages a surface portion of the back plate or a member mounted on the back plate, said surface portion being substantially parallel with a straight line joining the pivot point of the lever and strut and the point of abutment of the strut with said other shoe.

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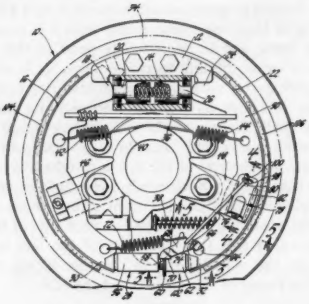
AUTOMATIC BRAKE ADJUSTER WITH AUTOMATICALLY ADJUSTED STEADY POINT

James L. Coulter, Fraser, and Harald H. Lorenz, Orchard Lake, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 16, 1980, Ser. No. 112,162

Int. Cl.[3] **F16D** *51/52*

U.S. Cl. 188—79.5 GC **3 Claims**



1. In a duo servo drum brake having a primary brake shoe and a secondary brake shoe, brake shoe adjusting mechanism comprising:

an adjusting strut between adjacent ends of said brake shoes;

an adjusting lever pivotally mounted on said secondary brake shoe adjacent to said strut for adjusting said strut during reverse braking release as necessary because of brake wear;

means pivotally attached to said adjusting lever and to said secondary brake shoe and providing fixed reaction for said adjusting lever during reverse braking;

and means responsive to movement of said secondary brake shoe during forward braking application to move the effective point of pivotal attachment of said reaction means to said secondary brake shoe in accordance with secondary brake shoe wear to adjust the effective point of fixed reaction for said adjusting lever.

4,270,634

AUTOMATIC/MANUAL ADJUSTER FOR DRUM BRAKE

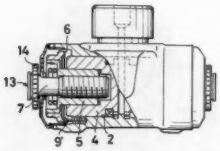
Takashi Matsuzaki, Tokyo, Japan, assignor to Akebono Brake Industry Co. Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,897

Claims priority, application Japan, Nov. 24, 1978, 53-161656[U]

Int. Cl.[3] F16D *65/40*

U.S. Cl. 188—196 M 6 Claims



1. An automatic/manual adjuster for a drum brake comprising:
   - a body;
   - a piston which is disposed within said body and is slidably arranged to push a brake shoe against a drum;
   - an adjuster nut which is rotatable within said piston and is arranged to be movable together with said piston, said adjuster nut being provided with teeth which are formed on the outer circumferential part of the adjuster nut;
   - an adjuster screw which is screwed to said adjuster nut and has one end thereof engaged with said brake shoe;
   - a lever having a middle part which is pivotally connected to said body;
   - a spring means arranged to engage said teeth with a first claw part provided at one end of the lever; and
   - a second claw part arranged at the other end of said lever to come to engage with said teeth when said first claw part is disengaged from said teeth by a swaying movement of said lever.

4,270,635

SHOCK ABSORBER FOR VEHICLES

Felix Wössner, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

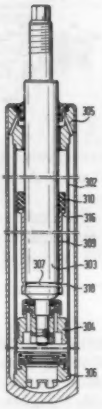
Filed Apr. 5, 1979, Ser. No. 27,355

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 109883[U]

Int. Cl.[3] F16F *9/32*

U.S. Cl. 188—322 13 Claims

1. Shock absorber for vehicles comprising
   - (a) an axially elongated cylinder having a first end and a second end,
   - (b) a piston rod guide secured in the first end of said cylinder,
   - (c) an axially elongated piston rod extending through and guided by said piston rod guide into said cylinder and having a first end located within said cylinder and a second end located outwardly from said piston rod guide in the first end of said cylinder, said piston rod being axially displaceable relative to said cylinder and piston rod guide between two end positions, a first end position in which the first end of said piston rod is close to said second end of said cylinder, and a second end position in which said first end of said piston rod is more remote from said second end of said cylinder than in said first end position,
   - (d) a damping piston secured to the first end of said piston rod within said cylinder,
   - (e) stop means arranged within said cylinder and located between said damping piston and said piston rod guide, said stop means including
     1. an axially elongated rigid sleeve unit coaxial with and closely encircling said piston rod and being tensioned in the circumferential direction for tightly gripping said piston rod, said elongated sleeve unit having a first end closely spaced from said damping piston and a second end more remote from said damping piston and closer to said piston rod guide,
     2. said sleeve unit including support means encircling said piston rod at the first end of said elongated sleeve unit for securing said elongated sleeve unit against axial movement relative to said piston rod towards said damping piston,
     3. a resilient ring encircling said piston rod and located between the second end of said elongated sleeve unit and said piston rod guide,



wherein said piston rod adjacent the first end thereof has a groove formed in and extending around the circumferential surface thereof, said groove being closely spaced from said damping piston in the range of 2 to 10 mm therefrom, said support means including at least one projection formed on said sleeve unit and extending inwardly therefrom into said groove for securing said sleeve unit to said piston rod, and wherein said elongated sleeve unit pushes said resilient ring against said piston rod guide in the second end position of said piston rod, the distance between said damping piston and said piston rod guide being in the range of 100 to 200 mm in said second end position of said piston rod.

4,270,636

LOCK-UP CONTROL SYSTEM FOR A TORQUE CONVERTER INCLUDING A TIMING ARRANGEMENT

Yoshio Sunohara, and Kunio Ohtsuka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 23, 1979, Ser. No. 23,472

Claims priority, application Japan, Apr. 4, 1978, 53-38853

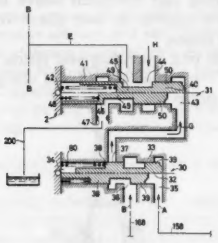
Int. Cl.[3] F16H *47/00*

U.S. Cl. 192—3.31 2 Claims

1. In an automatic transmission for a vehicle, the automatic transmission having at least two forward gear ratios and including a torque converter with a lock-up mechanism including a lock-up chamber and cooperating clutch elements which move toward each other and into a fully engaged position in response to a decrease in pressure within the lock-up chamber;
   - a lock-up control system for the torque converter comprising:
   - a source of pressurized fluid;
   - a fluid reservoir;
   - a valve communicating with the lock-up chamber, said source of pressurized fluid and said fluid reservoir for selectively establishing communication between the lock-up chamber and said source of pressurized fluid to pressur-

ize the lock-up chamber and communication between the lock-up chamber and said fluid reservoir to exhaust the lock-up chamber; and

a flow restrictor fluidly disposed between said valve and said fluid reservoir to restrict flow of fluid exhausted from said



lock-up chamber via said valve toward said fluid reservoir to control the speed at which pressure is decreased within said lock-up chamber;

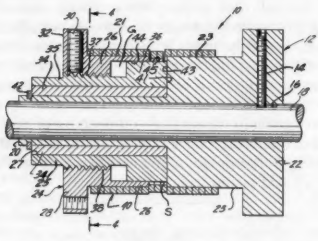
whereby the speed at which the cooperating clutch elements move toward each other and into the fully engaged position is determined by the size of said flow restrictor.

4,270,637

ADJUSTABLE SPRING CLUTCH

Robert D. Lowery, Willowick, Ohio, assignor to Marquette Metal Products, Fountain Inn, S.C.

Filed Feb. 26, 1979, Ser. No. 14,865
Int. Cl.[3] F16D *13/04, 13/08*
U.S. Cl. 192—41 S **8 Claims**



1. An adjustable spring clutch of the type to provide an intermittent rotary output in one direction comprising:

(a) an input clutch drum supported for reciprocal rotation and connected to a source of reciprocative rotative power so as to be driven by the latter, first in one direction and then the other;

(b) an output clutch drum supported for rotation independent of said input drum so that the input and output drums are free to rotate relative to each other;

(c) said input clutch drum and output clutch drum being constructed and supported to provide an annular gap between said input and output drums;

(d) a coil spring positioned coaxially with respect to said input and output clutch drums and spanning said gap and being connected to said input and output drums for gripping said input and output drums; and

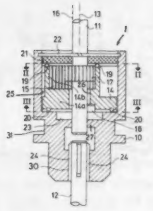
(e) adjustable means for varying the size of said annular gap and thereby vary the amount of relative rotative movement between said input drum and output drum before torque is transmitted from the input drum to the output drum.

4,270,638

APPARATUS FOR TRANSFERRING TORQUE FROM A DRIVING SHAFT TO A DRIVEN SHAFT

Kari Sassi, Helsinki, Finland, assignor to Konejukka Oy, Finland

Filed Mar. 14, 1979, Ser. No. 20,414
Int. Cl.[3] F16D *15/00*
U.S. Cl. 192—45.1 **14 Claims**



1. Apparatus for transferring torque from a driving shaft to a driven shaft comprising: an outer coupling body defining an interior cylindrical cavity having a first axis colinear with the axis of the driving shaft, said outer coupling body being mounted for relative movement between idling and coupling positions with respect to the driving and driven shafts; an inner coupling body located within said cavity having an upper surface, a lower surface and an interior curved coupling surface having a second axis which is offset from said first axis and a cylindrical outer surface concentrically located within said cavity having a third axis which is colinear with said first axis, the diameter of said cylindrical outer surface being slightly less than the diameter of said cylindrical cavity, said driven shaft being attached to said outer coupling body; a first coupling member fixed to the driving shaft adapted to be in coupling engagement with said interior curved coupling surface at least when said outer coupling body is in said coupling position; a second coupling member affixed to said driving shaft; means provided on said inner coupling body for couplingly engaging said second coupling member to said inner coupling body when said outer coupling body is in said idling position so that said inner coupling body is rotatable therewith around said third axis and for disengaging said inner body member from said second coupling member when said outer coupling body is in said coupling position so that said inner body has a tendency to rotate about said second axis; whereby when said outer coupling body is in the idling position, said second coupling member is engaged with said engaging means and said inner coupling body rotates within said cavity around said third axis and when said outer coupling body is in the coupling position, said second coupling member is disengaged from said engaging means and said inner coupling body tends to rotate within said cavity about said second offset axis through engagement between said first coupling member and said interior curved coupling surface of said inner coupling body, whereupon said outer coupling body is rotated by said inner coupling body thereby transmitting torque to said driven shaft.

4,270,639

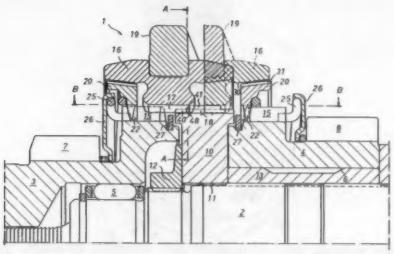
SYNCHRONIZING ARRANGEMENT FOR A MOTOR VEHICLE GEAR BOX

Tage R. W. Johnsson, Goteborg, Sweden, assignor to Saab-Scania AB, Södertälje, Sweden

Filed Nov. 8, 1978, Ser. No. 958,865
Claims priority, application Sweden, Nov. 11, 1977, 7712765
Int. Cl.[3] F16D *23/06*
U.S. Cl. 192—53 F **8 Claims**

1. In a synchronising arrangement for a motor vehicle gear box including a shaft, an externally toothed hub locationally fixed in the axial direction on the said shaft, and an internally toothed synchronising sleeve which is: (1) concentric with said

shaft, and (2) axially displaceable relative to said shaft, the improvement comprising said external teeth on said hub having a different tooth shaping in a lower and in an upper part of the tooth respectively, said hub tooth shaping in said upper part being wider than an extension of said hub tooth shaping in said lower part up to the maximum diameter of said hub, said tooth shaping in said upper part being such as to enable said hub teeth to fit into the grooves between the teeth on said hub



sleeve, said hub tooth upper part having a smaller axial length than said lower part and a tooth flank in the transition between said lower and upper parts, said hub teeth lower parts coacting with said sleeve teeth and said tooth flanks of said hub teeth upper parts occupying a position outside the profile of the tooth grooves on said sleeve, whereby to prevent axial displacement of said sleeve into engagement with said hub teeth upper parts, when said sleeve is axially displaced in relation to said hub and torque is transmitted.

4,270,640

FRICTION CLUTCH DRIVEN PLATES

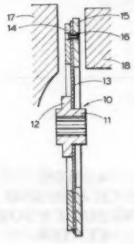
David A. Davies, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 24, 1979, Ser. No. 42,111

Claims priority, application United Kingdom, May 24, 1978, 21998/78

Int. Cl.³ F16D *13/72*

U.S. Cl. 192—70.14 **5 Claims**



1. A clutch driven plate for releasable clamped engagement between opposed driving surfaces and comprising:

a clutch hub member;

an annular friction facing carrier co-axial with and carried by the hub member;

an engine flywheel side annular friction facing provided co-axially on one side of said carrier; and

a clutch cover pressure plate side friction facing provided co-axially on the opposite side of said carrier, said friction facings being continuous annular rings for a major part of both radially co-extensive and said pressure plate side facing being a greater superficial area than said flywheel side facing.

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FLUID-FILLED FRICTION CLUTCH

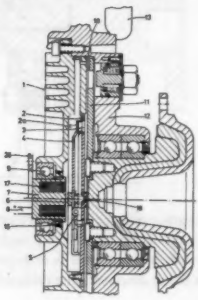
Manfred Nonnenmann, Schwieberdingen, and Werner Hummel, Waiblingen, both of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,792

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804859

Int. Cl.³ F16D *27/01, 27/10, 35/00*

U.S. Cl. 192—82 T **3 Claims**



1. A fluid friction clutch, especially for driving the cooling fan of an internal combustion engine, said friction clutch having a frontal portion and including rotary drive means, a housing disposed coaxially with said drive means and capable of relative rotation therewith, said housing having a separating wall which defines a drive chamber and a fluid reservoir chamber, said rotary drive means being provided with a drive disc located in said drive chamber, and wherein said separating wall has a passage which provides communication between said drive chamber and said fluid reservoir chamber, and said clutch further includes a valve assembly for opening and closing said passage and a D.C. powered stationary electromagnet for actuating said valve assembly under the control of a thermal switch, the improvement wherein said stationary electromagnet is disposed in said frontal portion of said clutch, said valve assembly includes a valve lever, and further comprising a permanent magnet, disposed coaxially to the clutch and on top of said valve lever, the polarity of said permanent magnet being opposite to the polarity of the field established by said electromagnet when energized, resulting in relative magnetic repulsion of said electromagnet and said permanent magnet moving said valve to its valve-closed position and turning off the clutch, the minimum distance between said electromagnet and said permanent magnet being limited by a stop which limits the displacement of said valve assembly.

4,270,642

CASTELLATED SPOOL FOR ELECTROMAGNETIC BAND CLUTCH

Ulrich O. Densow, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada

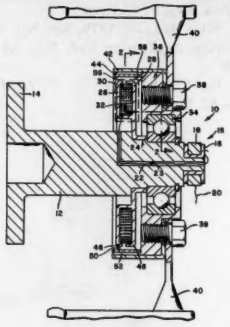
Filed Jan. 8, 1979, Ser. No. 1,555

Int. Cl.³ F16D *27/02*

U.S. Cl. 192—84 T **7 Claims**

1. In a clutch, a pair of coaxial, relatively rotatable members comprising a driving member and a driven member, a band for drivingly interconnecting said members when the clutch is engaged, means for drivingly engaging one end of the band with one of said members, the other member carrying a spool, said spool comprising a pair of circumferentially extending, axial offset pole piece portions cooperating with said band to define a magnetic circuit, said pole piece portions having uninterrupted, circumferentially extending edges facing said band

for engagement thereby when the clutch is engaged, means carried by said spool for generating magnetic flux for forcing said band into driving engagement with said edges, said edges having axially projecting portions cooperating with one another to define a segmented gap therebetween, said projecting portions having an outer surface facing said band for engagement by the latter when the clutch is engaged, said edges and said outer surfaces being disposed in a common circumferential plane.

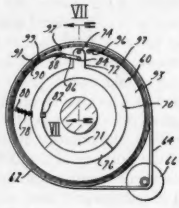


4,270,643

ACCELERATION RESPONSIVE CLUTCH

Dante S. Giardini, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1978, Ser. No. 968,946
Int. Cl.³ F16D *23/10*
U.S. Cl. 192—103 C **14 Claims**



1. An acceleration responsive clutch comprising:

a rotatable input member,

a rotatable output member mounted coaxially with respect to said input member,

torque transmitting means connected to said rotatable input member and constructed for selective movement between a first engaged position such that a torque is transmittable from said input member to said output member and a second disengaged position such that torque is not transmittable from said input member to said output member,

an inertia member attached to said torque transmitting means;

biasing means for biasing said inertia member to move said torque transmitting means to one of said first and second positions; and

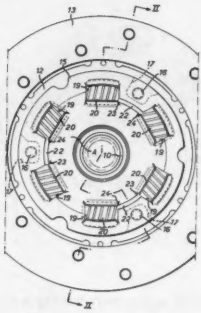
said inertia member being constructed to overcome said biasing means in response to a predetermined rate of angular acceleration of said input member to move said torque transmitting means to the other of said first and second positions.

4,270,644

TORSION SHOCK ABSORBER DEVICE SUITABLE FOR A CLUTCH FRICTION PLATE

René Billet, Lamorlaye, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Sep. 19, 1978, Ser. No. 943,626
Claims priority, application France, Oct. 13, 1977, 77 30810
Int. Cl.³ F16D *3/14*
U.S. Cl. 192—106.2 **7 Claims**



1. A torsion shock absorber device of the kind comprising two parts mounted for relative rotation with limited angular displaceability and rotationally coupled by shock absorbing elastic means, the said angular displaceability being controlled on the one hand by the said shock absorbing elastic means and on the other hand by friction between the said parts, which effect is adjusted by elastic axial gripping, one of the said parts comprising a disc and the other part comprising two guide washers fastened to one another and disposed one on each side of the said disc, the disc and the guide washers having openings, of which at least some serve to position the aforesaid elastic means, and wherein slot means are provided in at least one of the two guide washers leading into openings in the said washer in such a manner as to free in the latter at least one axially flexible region effecting the elastic axial gripping which adjusts the frictional effect between the two said parts, said slot means comprising at least one slot having two ends by which it leads respectively into two openings.

4,270,645

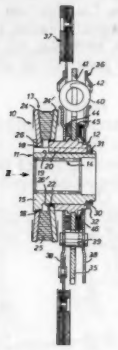
TORSION DAMPING CENTER AND A CLUTCH PLATE ASSEMBLY HAVING SUCH A TORSION DAMPING CENTER

Carlo Beccaris, Santena, Italy, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Nov. 1, 1978, Ser. No. 956,790
Claims priority, application France, Nov. 8, 1977, 77 33540
Int. Cl.³ F16D *3/14*
U.S. Cl. 192—106.1 **8 Claims**

1. A torsion damping center comprising a first hub, a second hub coaxial to said first hub, said first and second hubs being mounted for relative angular displacement and having means for defining limits of their relative angular displacement, and a damper ring operatively interposed between said hubs for a range of relative angular displacement within the defined limits, said damper ring comprising two annular plates, means for connecting one said annular plate for rotation with said first

hub and means for connecting said other annular plate for rotation with said second hub, and elastic damper pad means



axially disposed between and bonded to said annular plates, said annular plates being identical with each other.

4,270,646

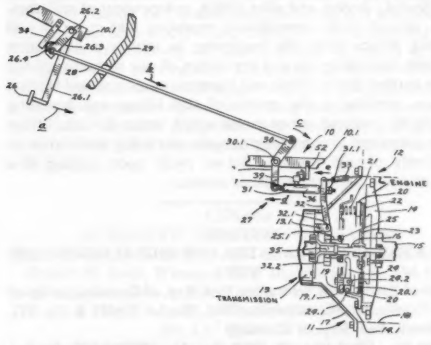
SELF-ADJUSTING AUTOMOTIVE CLUTCH LINK

Paul D. Norcross, Des Plaines, Ill., assignor to Thexton Manufacturing Company, Minneapolis, Minn.

Filed Jan. 25, 1979, Ser. No. 6,562

Int. Cl.³ F16D *11/00, 65/74*

U.S. Cl. 192—111 A **24 Claims**



1. Clutch operating apparatus accommodating progressive rearward tilting of the release fingers toward the throw out bearing as the clutch disc wears, comprising

an operating linkage including a manual control and being connected to the throw out bearing,

the linkage being movable between a rest position wherein the clutch is engaged and a shifted position wherein the throw out bearing has moved against and has forwardly tilted the release fingers to effect disengagement of the clutch, and

the linkage also including a length adjustable, hydraulic fluid filled link, and

hydraulic fluid flow control means connected to said link and operating in response to pressure exerted on the linkage in rest position by such rearward tilting of the release fingers as the clutch disc wears, and said control means operating to change the length of said link to relieve such pressure.

4,270,647

LUBRICATING OIL FLOW CONTROL DEVICE, ESPECIALLY FOR A SPEED-CHANGE TRANSMISSION OPERATING IN AN OIL BATH

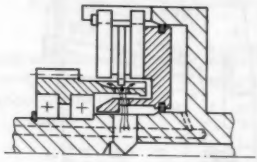
Fritz Leber, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrich-Shafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 19, 1979, Ser. No. 4,990

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1978, 2802676

Int. Cl.³ F16D *13/60*

U.S. Cl. 192—113 B **1 Claim**



1. In a lubricating-oil flow-control device for a shiftable clutch operating in an oil bath and comprising: a shaft formed with a lubricating-oil passage; an annular drive and forming an annular actuating cylinder pressurizable with a liquid medium; an annular piston slidably received in said cylinder and rotatable with said shaft while being axially shiftable upon pressurization of said cylinder relative to said shaft; a gear rotatably mounted on said shaft and having a gear sleeve extending axially toward said flange but peripherally spaced from said shaft; a lamella stack surrounding said sleeve and compressible by said piston upon axial displacement thereof upon pressurization of said cylinder by said medium to couple said gear with said flange; a bore formed transversely in said shaft and opening at the periphery of said shaft while communicating with said passage for discharging lubricating oil,

the improvement wherein said device comprises:

a control sleeve formed on said piston and extending axially along said shaft within said gear sleeve and of a length sufficient to cover said bore in all positions of said control sleeve, said control sleeve having an internal edge delimiting an annular compartment formed between said control sleeve and the periphery of said shaft, said edge forming a valve partially obstructing said bore in a nonpressurized condition of said cylinder and permitting free flow from said bore upon pressurization of said cylinder with said medium to compress said lamella stack;

a plurality of uniformly spaced radial bores formed in said control sleeve distributing lubricating oil from said compartment outwardly to said gear sleeve;

a plurality of radial bores formed in cais gear sleeve for delivering lubricating oil to said lamella stack;

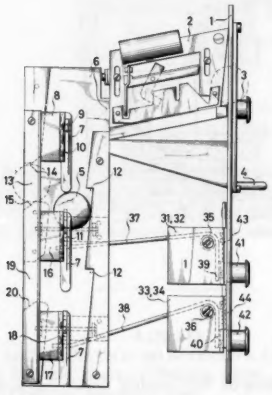
the bores of said shaft and said sleeve being substantially coplanar in an actuated position of said clutch with said cylinder pressurized by said medium; and

a further passage formed in said shaft and communicating with said cylinder for delivering said medium thereto independently of the supply of lubricating oil through the first-mentioned passage.

4,270,648
COIN OPERATING MECHANISM PROVIDING CONTROLLED PLAY OF MULTIPLE GAMES FROM A SINGLE COIN

Xaver F. Leonhart, 8381 Harburg, near 8385 Pilsting/Ndb., Del.X

Filed Nov. 15, 1979, Ser. No. 94,359
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849647
Int. Cl.[3] G07F 5/22
U.S. Cl. 194—1 C 10 Claims

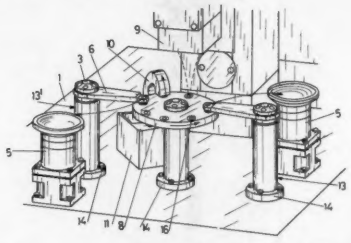


1. A coin operating mechanism for coin operated games and the like comprising, a coin channel (6) having side wall portions, end wall portions a top opening adapted to receive coin means and a bottom opening through which said coin means can be discharged, a plurality of switch means (8,16,17) spaced from each other along the length of said coin channel the number of which corresponds to the number of games provided by said coin means, said coin channel (6) having an opening through said side wall portions adjacent each of said switch means, a switch operator (7) for each of said switch means projecting through the corresponding opening into said coin channel into the path of travel of the coin means, a coin support lever (11,18) connected adjacent each switch means except for the uppermost switch means of said plurality of switch means, and projecting through the corresponding opening into said coin channel into the path of travel of the coin means and adapted to support the coin means sideways so the coin means tips toward one end wall portion (12) of the coin channel, said coin support lever (11,18) connected to pivot relative to said coin channel out of the corresponding opening, manually operable means (37 to 42) for each coin support lever (11,18) and operable to pivot the corresponding coin support lever out of said coin channel, and a coin discharge channel (13,19) through the other end wall portion of the coin channel (6) spaced above each coin support lever, each coin discharge channel (13,19) having a bottom wall (15,20) spaced above the corresponding coin support lever (11,18) by an amount such that the bottom wall constitutes an extension of the circumference of the sideways tipped coin means on the coin support lever, whereby a newly inserted coin is adapted to be deflected by the edge of the coin means on the coin support lever and directed through the coin discharge channel (13,19).

4,270,649
METHOD FOR CONTROLLING OPERATING PROCESSES

Herbert E. Mayer, Eschen, Liechtenstein, assignor to CENSOR Patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

Filed Dec. 4, 1978, Ser. No. 966,333
Int. Cl.[3] B65G 43/08, 43/10
U.S. Cl. 198—341 1 Claim

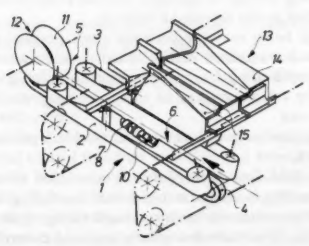


1. An improved method for controlling a system comprising a number of operating stations during the processing of particles by a common pre-set cycle; at least one of said operating stations employing a feeding device, and sensor means for detecting a fault in one of said operating stations to thereby retain said pre-set cycle for initiating a correcting process, the improved method comprising: taking up one of said particles by said feeding device and conveying said particle to a receiving tool and moving said feeding device back into its original position, said particle being retained during operation of the feeding device at reduced pressure; monitoring said reduced pressure by a first of said sensor means, whereupon indication of a deviation from said reduced pressure stops the cycle of said feeding device, and after which, independent of said common, pre-set cycle, immediately repeating said cycle of said feeding device from the beginning to initiate a correction process; said taking up and deposition of one of said particles being carried out by lifting and lowering motion of said feeding device, monitoring the extent of said lifting and lowering motion by a second sensor means which senses deviation from a pre-set extent, a correcting process also being initiated independently of said common pre-set cycle upon sensing of a deviation by said second sensor means.

4,270,650
PROCESS AND APPARATUS FOR THE ALIGNING OF FISH

Manfred Krohn, Bad Schwartau, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lübeck, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,640
Int. Cl.[3] B65G 15/14, 47/24
U.S. Cl. 198—388 11 Claims



1. A method for aligning beheaded fish, in particular fish

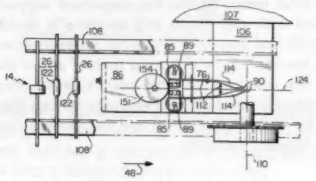
with a cross-section approximating to circular shape such as fish of the various *gadidae* species, in respect of the position of its plane of symmetry, with conveying support of the fish body at its belly, back and flanks, wherein the support at the belly of the fish is performed by inwardly arching the abdominal walls enclosing the abdominal cavity up to nearly the bearing of their insides against the undersides of the vertebral projections.

4,270,651

TAPED BELT ELECTRONIC COMPONENT CENTERING DEVICE

Phillip A. Ragard, and Frank J. Orzelek, both of Binghamton, N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,214
Int. Cl.[3] B65G *47/26*
U.S. Cl. 198—456 **3 Claims**



1. In an electronic component centering and guiding device for centering components on a conveyor, said centering device including a support base and a pair of juxtaposed, elongated blades suitable to be centered with respect to said conveyor and oriented in the direction of travel of said components on said conveyor, means for pivotally attaching a first end of each of said blades to said base the other end of said blades swingable apart in unison and in symmetric motion in opposition to means for biasing said blades into contact with a component, whereby said blades center said component by translating said component transversely to said direction of travel of said component, the improvement comprising: a driven rotatable cam for opening said blades before reception and pass-through of said components and for controlling the rate of closure of said blades onto said component and reopening during pass-through, said cam contacting at least one of said first ends of said blades.

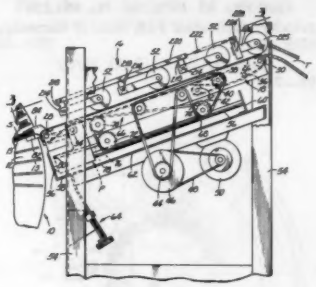
4,270,652

AUTOMATIC COLLATOR UNLOADER

Roger F. Lay, Schaumburg; John S. Jarecki, Villa Park, and Robert M. Koch, Wheaton, all of Ill., assignors to AM International, Inc., Los Angeles, Calif.

Filed Aug. 17, 1977, Ser. No. 825,355
Int. Cl.[2] B65G *47/52*
U.S. Cl. 198—486 **12 Claims**

1. A sheet handling apparatus comprising: a collator including a series of sheet holding bins for holding separate stacks of sheets, a conveyor for transporting stacks of sheets from said collator serially to a subsequent operation, and a gripper coacting between said collator and said conveyor for removing said stacks serially from said collator and transferring them to said conveyor, said gripper comprising a housing, means for reciprocably moving said housing along a linear pathway between a first position where a stack of sheets in a bin in said collator is gripped, and a second position where said stack of sheets is released to said conveyor, stack gripping means carried by the housing, means for actuating said gripping means at said first position to a stack gripping condition, and separate means for actuating said gripping means to a releasing condition in said second position, said stack gripping means including a pair of jaws and means coacting therewith for opening and closing said jaws, said jaw opening and closing means including a four-bar linkage, one of said jaws being carried by a link in said four-bar linkage and the other by said housing, said four-bar linkage including a crank link pivotally mounted in the housing, and said actuating means including means coacting between said crank link and said means for reciprocably moving said housing along a linear pathway for toggling said four-bar linkage to a gripping position.

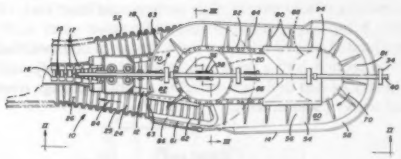


4,270,653

CONVEYOR FEED APPARATUS

Neal W. Densmore, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 795,270, May 9, 1977, abandoned. This application Jan. 18, 1979, Ser. No. 4,623
Int. Cl.[3] B65G *47/18*
U.S. Cl. 198—554 **7 Claims**



1. A material conveying means for conveying solid material comprising: a bin for receiving and containing such solid material therein; a conveying element including laterally spaced apart upstanding sidewall portions extending longitudinally thereof to partially define an elongated pocket adapted to receive and contain such solid material therein; said pocket being movable in the direction of the longitudinal extent thereof through a predetermined path of travel with respect to said bin; said bin including feed aperture means overlying said pocket for feeding such material from said bin into seriatim portions of said pocket during continuous movement of said seriatim portions of said pocket along said path and past said feed aperture means; material transporting means cooperable with said bin for transporting material contained in said bin to said feed aperture means for feeding of such material into said seriatim portions of said pocket; and feed chute means depending from said feed aperture means and internally overlapping said sidewall portions of said pocket to control feeding of such material through said aperture means and into said pocket independently of the rate at which such material is moved to said aperture means for such feeding thereof.

4,270,654
SINGLE CHAIN SCRAPER CONVEYOR

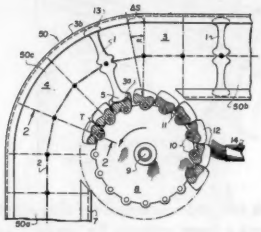
Ernst Braun, Hofackerstr. 12b, and Gert Braun, Hofackerstr. 12a, both of 43 Essen-Heisingen, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,038

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747505

Int. Cl.[3] **B65G** *19/00, 23/00*

U.S. Cl. 198—729 **2 Claims**



1. A scraper conveyor, comprising a trough having first and second straight sections disposed at angles to each other, and an intermediate curved section between and joining said first and second straight sections, said intermediate section having an inner curved edge and an outer curved edge, said trough having an opening along said inner curved edge, an endless chain centered in and movable along said trough, a plurality of flights secured to said chain at spaced locations along the length thereof and extending transversely of said chain and having an outer end which moves around adjacent the outer edge of said intermediate section and an opposite inner end which moves around said inner curved edge, a deflector wheel rotatably mounted about an axis adjacent said intermediate section so that a portion of its periphery moves parallel to said inner curved edge of said intermediate curved section, a plurality of heads pivotally mounted on said deflector wheel adjacent the periphery thereof at spaced circumferential locations around its periphery and having outer ends extending through the opening of said intermediate section, said inner ends of said flights being engageable on respective head outer ends and being guided around the inner curved edge of said intermediate curved section, and a reset mechanism disposed adjacent the periphery of said deflector wheel in a path to engage over the outer ends of said heads.

4,270,655
WALKING-BEAM CONVEYER

Oskar Noe, Mülheim, Fed. Rep. of Germany, assignor to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Continuation of Ser. No. 868,339, Jan. 10, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 102,277

Claims priority, application United Kingdom, May 19, 1977, 21060/77

Int. Cl.[3] **B65G** *25/00*

U.S. Cl. 198—774 **6 Claims**

1. A walking-beam conveyer for the intermittent advance of articles along a horizontal transport path, comprising:

fixed rests alongside said transport path for temporarily receiving the articles to be advanced;

at least two actuating stations at spaced-apart locations along said transport path;

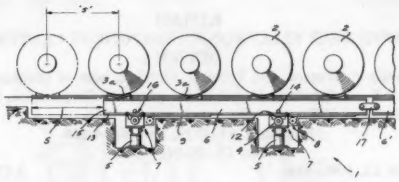
a horizontal beam member spanning said actuating stations;

a vertically reciprocable supporting head at each of said actuating stations provided with roller means engaging said beam member for guiding same horizontally along said transport path;

first drive means at each of said actuating stations engaging said supporting head for alternately raising and lowering same together with said beam member;

a rack on said beam member overlying at least one of said actuating stations;

a pinion on said supporting head of said one of said actuating stations in mesh with said rack; and



second drive means on the last-mentioned supporting head coupled with said pinion and operable in timed relationship with said first drive means for linearly advancing said beam member, upon elevation thereof above the level of said rests, and retracting said beam member after a lowering thereof below said level whereby articles lifted off said rests by said beam member are redeposited thereon at a more forward location.

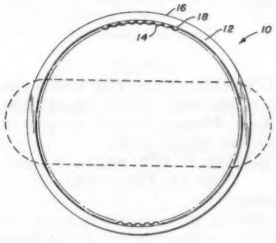
4,270,656
RUBBER AND FABRIC FEED BELT

Alec D. Chesmer, and Joseph Turner, both of Windham Center, Conn., assignors to Rogers Corporation, Rogers, Conn.

Filed Oct. 11, 1977, Ser. No. 840,590

Int. Cl.[3] **B65G** *15/34*

U.S. Cl. 198—847 **9 Claims**



1. A feed belt comprising:

an endless band of elastomeric material having an inner surface and an outer surface;

reinforcing means embedded in said band of elastomeric material, said reinforcing means comprising fabric material positioned at the pitch line of the belt;

a plurality of teeth spaced about said inner surface of said belt, said teeth being formed from said elastomeric material and being integral with said band, said reinforcing means being exposed in the spaces between said teeth; and

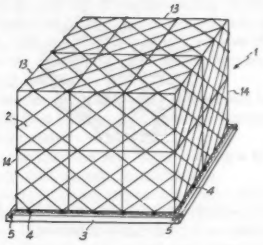
a surface layer on said teeth, said surface layer being formed from said elastomeric material and having a coefficient of friction which is less than the coefficient of friction of the outer surface of said band of elastomeric material.

4,270,657

HOLDING NET, PARTICULARLY FOR THE STOWING OF LOADS ON PALLETS AND THE LIKE

Patrice M. Bayon, Avrillé, France, assignor to L'Aiglon, Maine et Loire, France

Filed Jun. 11, 1979, Ser. No. 47,782
Claims priority, application France, Jun. 12, 1978, 78 17535
Int. Cl.[3] B65D *19/00*
U.S. Cl. 206—386 12 Claims



1. A holding net made from a plurality of individual straps each having a plurality of openings passing therethrough along its length and, each being interwoven by passage through said openings to form a diamond-shaped mesh row,

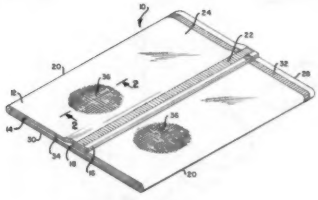
the improvement wherein each alternate diamond-shaped mesh row of the net is formed of two lengths of a single strap connected together at the free ends thereof, alternate diamond-shaped mesh rows being formed of different individual straps and diamond-shaped mesh rows therebetween being formed by adjacent, different straps.

4,270,658

BREATHABLE, STERILIZABLE RECEPTACLES FOR STORING ARTICLES IN STERILE CONDITION

Samuel J. Schuster, 617 Vallombrosa, Pasadena, Calif. 91107

Continuation-in-part of Ser. No. 955,221, Oct. 27, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 87,053
Int. Cl.[3] A61B *17/06;* B65D *73/00;* B32B *3/10*
U.S. Cl. 206—439 7 Claims



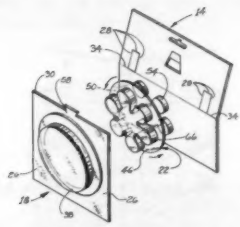
1. A receptacle for storing an article in sterile condition comprising a pair of opposed walls joined about a portion of their peripheries, at least one of the walls comprising a laminated wall including an outer layer of a material impermeable to microorganisms but highly permeable to sterilizing vapor and an inner layer of polymeric material, at least a portion of the laminated wall having breathers for the introduction and removal of sterilizing vapor, each breather comprising a discrete, delaminated portion of the wall, the delaminated portion of the inner layer comprising a ruptured, blister-like projection.

4,270,659

RECLOSABLE DISPENSING BLISTER CARD PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 14, 1979, Ser. No. 103,849
Int. Cl.[3] B65D *83/04, 85/56*
U.S. Cl. 206—538 12 Claims



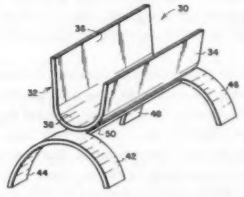
1. A reclosable blister package having an opening end defined thereon comprising: a backing board; a blister; and an insert; said blister being secured to one surface of said backing board by means of a substantially peripheral blister flange, said blister having a cavity therein; said board and said blister being so cooperatively arranged and configured that said board may be rotated away from said cavity to expose said cavity; said insert being generally circular and having an array of pockets for containing products, said cavity and said insert being adapted and configured such that said insert is rotatable within said cavity.

4,270,660

TACO HOLDERS

Arthur G. Putt, 5901 Cornell Blvd., North Ridgeville, Ohio 44039

Filed Feb. 14, 1979, Ser. No. 12,062
Int. Cl.[3] A47F *7/00*
U.S. Cl. 211—13 3 Claims



1. A holder for comestible products such as tacos or the like, comprising:

(a) an elongate, trough-like carrier, the carrier being generally U-shaped when viewed from the end and having relatively tall front and rear walls; and

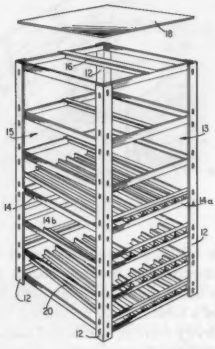
(b) a stand atop which the carrier is secured, the stand including a plurality of legs of generally equal length, at least one leg being disposed near lower corner portions of the carrier, the stand also including an elongate member having a length equal to, or greater than, the length of the carrier, the elongate member being secured to the carrier near the lowermost portion of the carrier, the elongate member including attachment points for the legs which are included as part of the stand, the attachment points being located laterally outwardly of the carrier.

4,270,661

BATTERY STORAGE RACK

Phillip Rosenband, Hammond, Ind., assignor to Parsteel Products & Services Company, Inc., Chicago Heights, Ill.

Filed May 3, 1979, Ser. No. 35,740
Int. Cl.[3] A47F 5/10
U.S. Cl. 211—49 D 15 Claims



1. In a storage rack assembly of the type having a plurality of vertically disposed corner posts and a plurality of horizontally disposed beams interconnected between the corner posts for defining a box-like structure having a front face and a rear face, said corner posts each including a plurality of spaced apertures defining a central area and a pair of opposed narrower end areas arranged in coaxial alignment with said posts, said beams each including at least one load carrying tab projecting from one end thereof and characterized by a central portion spaced from the beam, a pair of connecting arms extending from opposite sides of the central portion to the beam and a pair of opposed ear portions extending from the central portion and spaced from the beam, said apertures and tabs mating for interconnecting the beams and posts wherein one of said connecting arms bears against one of said end areas with said opposed ear portions contacting the post adjacent said aperture,

the improvement comprising a plurality of elongate partition members interconnected in spaced parallel relationship between a first beam forming part of said front face and a second beam forming part of said rear face, each of said partition members comprising a horizontally disposed base portion extending between said first and second beams, a leg portion extending upwardly from the center and longitudinally of said base portion, a guide bar horizontally disposed along the length of the edge of said leg portion opposite said base portion, said guide bar including two vertically disposed guide surfaces extending laterally from opposite sides of said leg portion and a pair of shoulders extending upwardly from each edge and longitudinally of said base portion to a height less than the height which said leg portion extends above said base portion whereby, each two adjacent ones of said plurality of partition members defines a channel for receiving an item of inventory, said channel comprising

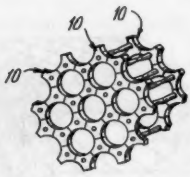
the center legs of each of said adjacent partition members for guiding said item of inventory therebetween and one of said shoulders of each of said adjacent partition members on which said item of inventory is slidable between said first beam and said second beam.

4,270,662

MODULAR BOTTLE SUPPORT RACK

Jesus C. Gonzalez, Parque de San Francisco, 3 Burgos, Spain

Filed Aug. 7, 1978, Ser. No. 931,352
Claims priority, application Spain, Aug. 8, 1977, 230325
Int. Cl.[3] A47B 73/00
U.S. Cl. 211—74 8 Claims



1. A modular support rack comprising at least two coupled identical members, each said member having:

a first portion, each said first portion includes a plurality of circumferentially spaced bottle craddling surfaces and a plurality of first portion connecting members circumferentially and symmetrically spaced on said first portion, each said connecting member being intermediate a pair of bottle craddling surfaces,

a second portion extending from said first portion and forming a projecting member, said projecting member extending from the center of said symmetrical spacing and being symmetrically positioned relative to said craddling surfaces and said first portion connecting members; and

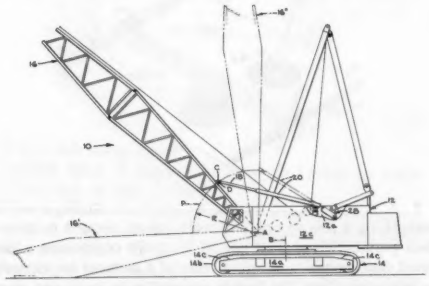
latching means, each said projecting member having latching means at its extended end for joining together with the projecting member of another of said at least two identical modular members whereby to form a pair of spaced bottle craddling surfaces from each coupled pair for supporting a bottle at spaced intervals along the bottle surface.

4,270,663

STOP FOR CRANE BOOM

Gerald P. Berger, Cedar Rapids, Iowa, assignor to FMC Corporation, San Jose, Calif.

Continuation of Ser. No. 952,163, Oct. 17, 1978, abandoned, which is a continuation of Ser. No. 650,340, Jan. 19, 1976, abandoned. This application Nov. 14, 1979, Ser. No. 93,953
Int. Cl.[3] B66C 23/06, 13/48
U.S. Cl. 212—222 5 Claims



1. In a crane having a body and having a boom pivotally mounted to the body at a first location for swinging movement in a vertical plane, and further having

boom stop mechanism connected between the body and boom to arrest further swinging movement of said boom

when it reaches an upper extreme position, the improvement therein comprising:

a first rigid member defining an elongated sleeve open at both ends, said sleeve having a pivot connection fixed thereto adjacent one open end thereof and disposed in laterally spaced relation to said sleeve open end thereat whereby said open end is unobstructed by said pivot connection,

a second rigid member defining an elongated rod slidably received in said sleeve and extending outwardly from the other open end of said sleeve to terminate in a pivot connection, said rod having a length greater than said sleeve so as to be enabled to slide therein to entend outwardly from said one sleeve end,

a pivotal mounting on said body at a second location spaced from said first location and having a horizontal pivot axis fixed with respect to said body,

a pivotal mounting on said boom having a horizontal pivot axis fixed with respect to said boom,

a pivot pin interconnecting said body pivotal mounting and the pivot connection on one of said members for swinging movement of said member about said body fixed axis,

a pivot pin interconnecting said boom pivotal mounting and the pivot connection on the other of said members for swinging movement of said member about said body fixed axis, said rigid members constituting the sole interconnection between said pivotal mounting, and,

a stop unit rigidly affixed to said body in a predetermined position thereon,

said stop unit having an elongated receiving means, abutment means disposed in said receiving means and mounted for axial movement therein, and cushion means interconnecting said receiving means and said abutment means,

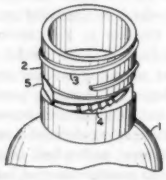
said stop means being mounted in spaced relation to said one end of said sleeve to permit said sleeve to pivot relative thereto as said boom swings, said abutment means being axially aligned with said sleeve when said boom reaches an upper extreme position thereby to receive said rod sliding outwardly from said one open sleeve end into abutting relation with said abutment means.

4,270,664

ONE PIECE CHILD RESISTANT CAP

Caetano Buono, Staten Island, N.Y., assignor to Van Blarcom Closures, Inc., Brooklyn, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,043
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—216 **2 Claims**



1. One piece child resistant cap for containers comprising:

a container having a neck with a thread on its external surface,

a first group of teeth arranged in a line on said neck below the lower end of said thread,

a second group of teeth arranged in a line on said neck opposite said first group of teeth,

a cap of flexible material having a cap thread adapted to engage the container thread,

a third group of teeth on the inside of the lower portion of the cap spaced below the cap threads,

a fourth group of teeth on the inside of the lower portion of the cap and opposite the third group of teeth,

all the cap teeth and the container teeth being located along a spiral parallel to said thread,

whereby when the cap is screwed on to the container the cap teeth will engage the container teeth so that the cap cannot be unscrewed in conventional manner so that the cap must be squeezed to release the engagement of the cap teeth and the container teeth,

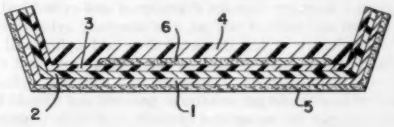
and whereby the cap may be tightly closed to eliminate leakage if the container is tipped over.

4,270,665

PEELABLE ADHESIVE STRUCTURE AND METHOD FOR ITS MANUFACTURE

Go Kunimoto, and Fumio Mori, both of Yokahama, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 50,864
Int. Cl.³ B65D *41/12;* **B32B** *15/08*
U.S. Cl. 215—347 **25 Claims**



1. A peelable adhesive structure comprising a plurality of articles, including at least one metal article, bonded together through a composite coating layer, the composite coating layer comprising adjacent first and second coating layers, the first coating layer containing vinyl resin and having a thickness ranging from about 0.5 to about 100 mg/m², the second coating layer containing epoxy resin without vinyl resin and having a thickness ranging from about 0.5 to about 100 mg/m² at least one of the coating layers comprising:

(a) a peeling imparter at a concentration of between about 50 and 200 parts by weight per 100 parts by weight of resin, and

(b) a substantially linear saturated polyester wetting improver at a concentration of between about 2 and 50 parts by weight per 100 parts by weight of resin and having a molecular weight of between about 5,000 and about 50,000,

the plurality of articles having a peeling strength between about 0.05 and 5 kg/cm between the first and the second coating layers.

16. A peelable adhesive structure comprising a plurality of articles, including at least one metal article, bonded together through a composite coating layer, the composite coating layer comprising adjacent first and second coating layers, the first coating layer containing vinyl resin and having a thickness ranging from about 0.5 to about 100 mg/m², the second coating layer containing epoxy resin without vinyl resin and having a thickness ranging from about 0.5 to about 100 mg/m², at least one of the coating layers comprising:

a hydrocarbon or natural resin having a softening point less than 180° C. and having

a concentration between about 50 and 200 parts by weight per 100 parts by weight of resin,

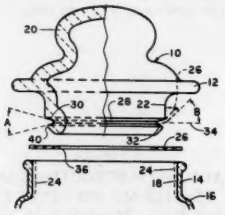
the vinyl resin or the epoxy resin being in the form of a continuous phase, the hydrocarbon or natural resin being in the form of a dispersed phase whose particles are less than 100 microns in diameter, and the plurality of articles having a peeling strength between about 0.05 and 5 kg/cm between the first and second coating layers.

4,270,666

CLOSURE SEAL FOR CONTAINERS

Glenn B. Beckman, Dover, Pa., assignor to Susquehanna Broadcasting Company, York, Pa.

Filed Jan. 18, 1980, Ser. No. 113,304
Int. Cl.³ B65D *39/00*
U.S. Cl. 215—364 **4 Claims**



1. A container comprising in combination, a jar having a neck provided with a substantially cylindrical inner surface, a closure having a body provided with a laterally extending rim of greater diameter than the diameter of said cylindrical inner surface of said neck of said jar, a substantially cylindrical wall on said closure of less diameter than said cylindrical inner surface of said neck of said jar depending from said rim to provide an annular space between said wall and cylindrical inner surface of said jar, an annular grooved seat formed in said wall adjacent the outer end thereof, a flexible initially flat circular sealing gasket of less thickness than said annular space and an inner diameter less than the innermost diameter of said seat and the outer diameter being substantially greater than the diameter of the cylindrical inner surface of said neck of said jar and the inner edge of said gasket being disposed in said seat to connect the same to said closure and also stretch said inner edge portion of said gasket to distort said flat gasket into a generally frusto-conical shape in which said gasket projects outward and upward toward said rim of said closure at an angle of between approximately 30° and 45° to a plane perpendicular to said cylindrical wall and outward a greater distance than the diameter of said cylindrical inner surface of said neck of said jar, whereby when said closure is in closed position in said neck of said jar the outermost portion of said sealing gasket has an inner surface extending upward and outward so as to be spaced from the cylindrical wall of said closure to provide limited floating and flexible wiping contact with the entire circumference of the inner surface of the neck of said jar, thus effectively to seal the interior of said jar in air-tight manner and also compensate for limited variations in the manufactured diameters of the necks of similar jars and/or covers, as well as variations in roundness of said jar necks and/or covers.

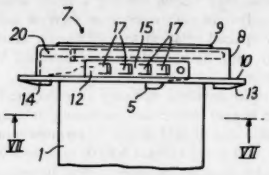
4,270,667

CONVERSION RING FOR FILLERS

Michel Neiman, Paris, France, assignor to Societe de Diffusion NEIMAN, Courbevoie, France

Filed Jul. 27, 1979, Ser. No. 61,121
Claims priority, application France, Jul. 28, 1978, 78 22346; Jul. 28, 1978, 78 22347; Jul. 28, 1978, 78 22348
Int. Cl.³ B65D *41/06*; F16L *55/00*
U.S. Cl. 220—86 R **4 Claims**

1. A conversion ring for fillers of tanks, said fillers being of the kind having an external flange formed with two diametrically opposed cut-away portions with inclined faces, said ring being formed by a cylindrical wall and a flange inwardly extending from said wall and shaped to receive a filler cap, comprising a first locking means for cooperation with said external flange to prevent axial displacement of the ring in relation to the filler, and a second locking means constituted by at least one appropriately orientated depressed portion provided at the annular wall of the ring, this depressed portion being intended to cooperate with the inclined face of at least one of the two diametrically opposed cut-away portions of the external flange



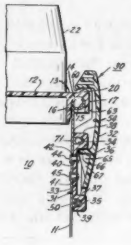
to prevent rotation of the ring in relation to the filler once the ring is placed on the filler.

4,270,668

BUCKLE OR LATCH FOR HOLDING LID TO CONTAINER

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Feb. 5, 1980, Ser. No. 118,786
Int. Cl.³ B65D *45/16*
U.S. Cl. 220—324 **18 Claims**



1. A latch or buckle for latching a lid to a container, wherein said buckle comprises:

a mounting bracket for being secured to the wall of the container, said mounting bracket including an abutment thereon extending to a position where said bracket abutment will engage a cooperating abutment of the buckle upon attempted separation of the container and the lid;

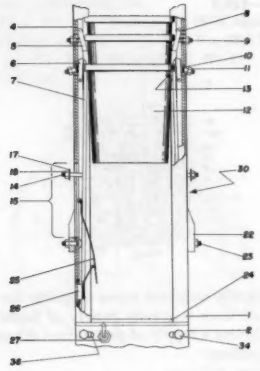
a buckle element which is relatively movably connected to said mounting bracket at a location on said mounting bracket that is further from the lid to be held by said buckle than said mounting bracket abutment; said buckle element including a lid engaging portion positioned such that when said buckle element is moved to a first position thereof, said lid engaging element is in engagement with a lid of the container, and when said buckle element is moved to a second position thereof, said engaging element is out of engagement with that lid over the container; the aforesaid cooperating abutment being on said buckle element and moving therewith and being so shaped and so positioned on said buckle element that when said buckle element is in said first position thereof, said buckle element cooperating abutment is in engagement with said bracket abutment such that the engagement between said buckle element abutment and said bracket abutment obstructs such movement of said buckle element in a manner that would permit lifting of the lid off the container, whereby forces which are directed toward separating the lid from the container are generally absorbed between the cooperating said abutments, rather than at said movable connection between said bracket and said buckle element.

4,270,669

POT SEPARATOR

Virgil E. Luke, 4217 McCann Rd., Vancouver, Wash. 98665

Filed Jul. 27, 1978, Ser. No. 928,610
Int. Cl.[3] B65G 59/06
U.S. Cl. 221—13 5 Claims



1. An apparatus specifically adapted for separating and dispensing nested nursery pots, having radially extending flange members, from a stack of such pots, said apparatus comprising:

a frame constructed to receive a stack of nested nursery pots to be separated and to define a path for pot travel axially of the stack;

positioning means for maintaining said stack in a fixed position with one end thereof at a predetermined location along said path;

a separation mechanism adapted to move a first pot at said one end of said stack to a dispensing location on said path away from said stack, said mechanism including at least one elongated member that:

a. is located to extend alongside and substantially parallel to said path,

b. is mounted to said frame for movement in a direction substantially parallel to said path, and

c. defines a detent which faces said path and which is positioned at a location along said elongated member so that movement of said elongated member toward said stack causes said first pot to be pulled away from said stack causes a flange member, extending radially from said first pot, to be received and retained by said detent and so that subsequent movement of said elongated member away from said stack and to be carried and supported by said elongated member for at least a portion of the distance between said predetermined location and said dispensing location;

drive means for imparting reciprocating motion to said elongated member; and

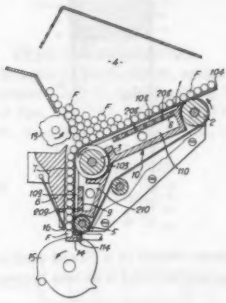
release means for moving at least a portion of said elongated member radially outwardly from said first pot as said pot approaches said dispensing location so that said flange member is released from said detent and said first pot ceases to be carried and supported by said elongated member.

4,270,670

DEVICE FOR THE HIGH SPEED FEEDING OF ROD-LIKE ARTICLES

Athos Cristiani, Bologna, and Gianluigi Gherardi, Medicina, both of Italy, assignors to CIR S.p.A. Divisione Sasib, Bologna, Italy

Filed Mar. 26, 1979, Ser. No. 24,079
Claims priority, application Italy, Mar. 29, 1978, 12534 A/78; Apr. 28, 1978, 12584 A/78
Int. Cl.[3] B65H 3/12
U.S. Cl. 221—211 4 Claims



1. A device for the high speed feeding of rod-like articles such as cigarette filter rods from a magazine containing a bulk supply of such articles, through a chute having an upper inlet end, a lower outlet end and spaced apart walls to define a flow path for a single row of articles, to pick-up means which sequentially pick up the articles individually the one after the other operative association with the outlet end of the said chute, wherein the improvement resides in the fact that there are provided forced-feeding means for positively feeding the said articles from the bottom of the magazine, where the said chute opens with its inlet end, through the said inlet end of the chute, said forced-feeding means comprising: an endless suction belt which defines at least an upper portion of a side wall of the chute, and at least an adjoining portion of the bottom wall of the magazine; and means driving said belt at a speed sufficient to propel articles downwardly through the chute, starting from the upper portion thereof, with an acceleration greater than that produced by the force of gravity.

4,270,671

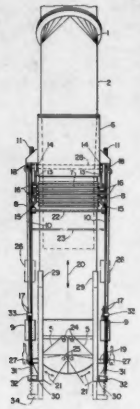
DISPENSER FOR BULK PARTICULATE MATERIAL

John B. Arnold, Salina, Kans., assignor to Archer Daniels Midland Company, Decatur, Ill.

Filed Sep. 25, 1978, Ser. No. 945,294
Int. Cl.[2] B65D 47/04
U.S. Cl. 222—58 3 Claims

1. An apparatus for dispensing bulk, particulate material in a controlled, choked flow, comprising a conduit leading from a supply of the bulk material to a vertically depending hopper through a directional change in the conduit adapted to absorb a substantial amount of kinetic energy from the moving stream of particulate material immediately prior to the location where the particulate material falls into said hopper, closure means comprising a pair of pivotally operated clam shell members at the bottom of the hopper adjustable to any position from closed to wide open based on the weight of particulate material in the hopper, greater weight causing a larger opening, a vertically extensible bellows connection between the hopper and

the conduit upstream of the hopper, and a counterbalance weight providing an upwardly directed force on said hopper to



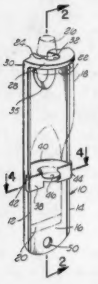
maintain the closure means in a closed position until a given weight of particulate material is in said hopper.

4,270,672

DISPENSING HOLDER FOR A COLLAPSIBLE TUBE

Ralph Kraals, 551 Evergreen Dr., Pasadena, Calif. 91105

Filed Jul. 26, 1979, Ser. No. 60,957
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—95 **13 Claims**



1. A dispensing holder for a collapsible tube, said holder comprising:

a carrier formed to receive a collapsible tube of the type having a relatively flat rear end and a conical front end and terminating in a rigid neck;

a seat extending substantially normal to, the front of said carrier;

said carrier being formed with a recessed front portion connected to said seat whereby said seat and carrier define a continuous aperture at least a continuous portion of which is at least as wide as the neck of a collapsible tube of said type and extends across the connection between said seat and carrier so that the conical front end of the tube of said type can be received through said seat and then pivoted downwardly through said connection to be received in said recess and through said carrier; and

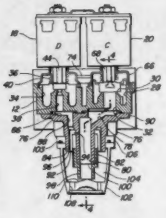
means for progressively collapsing a collapsible tube that may be disposed on said carrier to a position adjacent said aperture through said carrier whereby to permit the conical front end of a collapsible tube of said type to be pivoted downwardly through said connection thereby facilitating emptying of said tube.

4,270,673

ELECTRIC GRAVITY DISPENSING VALVE

Joseph J. Rodth, Swansea, Mass., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jul. 24, 1978, Ser. No. 927,435
Int. Cl.³ B67D *5/56*
U.S. Cl. 222—129.3 **3 Claims**



1. An electrically operated valve assembly for dispensing a beverage mixed from a gravity supply of liquid concentrate containing pulp and a supply of pressurized diluent, said valve assembly comprising:

(a) body means defining

(i) a concentrate valving chamber having an inlet adapted for connection to said pulp supply and an outlet, said chamber having a valving surface provided therein;

(ii) a diluent valving chamber having an inlet adapted for connection to said diluent supply and an outlet, said chamber having a valving surface provided therein; and

(iii) means defining a cross-flow passage connecting said diluent and pulp passages upstream of said valving surfaces;

(b) a concentrate valve member disposed within said concentrate valving chamber movable between an open position spaced from and a closed position contacting said diluent valving surface;

(c) a diluent valve member disposed within said diluent valving chamber and movable between an open position spaced from and a closed position contacting said diluent valving surface;

(d) means biasing said diluent and concentrate valves to the closed position;

(e) pressure responsive means operative to move said concentrate valve member in response to the pressure differential between said concentrate valving chamber inlet and outlet;

(f) nozzle means including

(i) means receiving flow by gravity from said concentrate outlet passage and operative to discharge said concentrate vertically downward by gravity and including means defining a knife edge orifice for metering said concentrate flow and

(ii) means defining an annular flow passage disposed to receive flow from said diluent valving chamber outlet and operative to discharge said diluent vertically downward in an annular shower surrounding said concentrate and for effecting thorough mixing of concentrate and diluent and thereafter discharging the mixture vertically downward;

(g) power means operative upon energization to overcome the force of said bias means to move said diluent and concentrate valve members from the closed to the open position; and

(h) wherein said cross-flow passage is operative to permit application of said diluent inlet pressure to said pressure responsive means to increase the bias on said pulp concentrate valve means, and upon opening of said diluent valve,

said cross-flow passage permitting bleed-off of the pressure in said pulp concentrate passage inlet to relieve said pressure bias on said pulp concentrate valve member for permitting opening of said pulp concentrate valve by said power means.

4,270,674

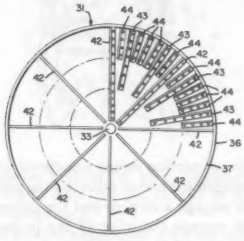
INTEGRAL HEATER FOLLOWER PLATE

Leo M. Moore, Richmond, Va., assignor to Industrial Machine Service Co., Inc., Richmond, Va.

Continuation of Ser. No. 726,790, Sep. 27, 1976, abandoned. This application Jun. 18, 1979, Ser. No. 49,571

Int. Cl.[3] B67D *5/62;* **F16K** *49/00*

U.S. Cl. 222—146 HE **8 Claims**



1. An integrally fabricated heater follower plate comprising:
a plate having a top surface, a bottom surface and a peripheral edge surface;
an aperture cut through said plate;
wiper means secured around said peripheral edge surface, said wiper means extending slightly beyond said peripheral edge surface of said plate;
at least one spiral groove cut into said bottom surface of said plate;
a spiral heater wire embedded into said at least one spiral groove; and
a plurality of heat conducting fins secured in intimate heat contact to said bottom surface of said plate.

4,270,675

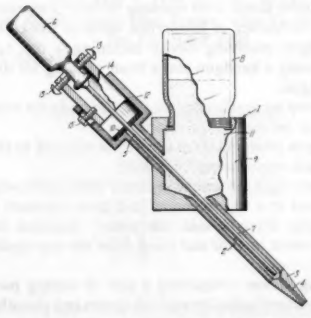
POWDER FEED APPARATUS

Ruel E. Wicks, Manchester, and Herbert A. Tourtellotte, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1979, Ser. No. 88,807

Int. Cl.[3] B65G *65/40, 69/00*

U.S. Cl. 222—196 **2 Claims**



1. An apparatus for feeding powder at a controlled constant rate consisting of:
a. a powder reservoir;
b. a downwardly sloping powder feed tube which terminates in a nozzle and which contains a passage which communicates between the powder reservoir and the nozzle;
c. vibrating means for generating axial mechanical vibrations, said means being located external of the powder reservoir and powder feed tube;
d. a drive rod connected to the vibrating means, said rod being located within the powder feed tube and ending in proximity to the nozzle, (without passing into or through the nozzle) and being adapted to reciprocate, in the direction of its length, relative to the powder feed tube.

4,270,676

FEED DISTRIBUTORS

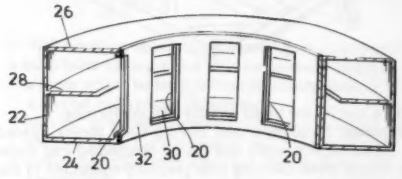
Basil W. Green, Boksburg, South Africa, assignor to Fraser & Chalmers Equipment Limited, Johannesburg, South Africa

Filed Jun. 15, 1979, Ser. No. 48,774

Claims priority, application South Africa, Jun. 16, 1978, 78/3467

Int. Cl.[3] B28C *5/04*

U.S. Cl. 222—485 **5 Claims**



1. A slurry feed distributor for sedimentation apparatus comprising two annular channels extending around a zone of distribution, at least one aperture along the length of each channel from which slurry fed along the channel flows into the zone, means to feed slurry into the two channels in opposite directions, and means for adjusting the size of the opening of each aperture.

4,270,677

RECLOSABLE CROSS-BOTTOM SACK

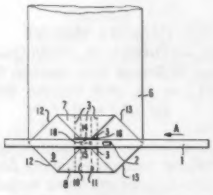
Horst Schmidt, Kattenvenne, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,679

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838859

Int. Cl.[3] B65D *30/12, 83/00*

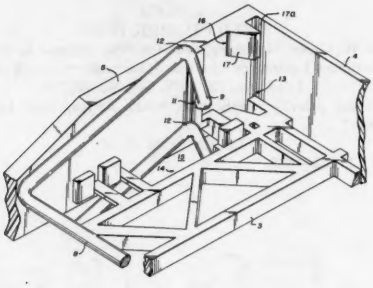
U.S. Cl. 222—561 **4 Claims**



1. A reclosable cross-bottom sack consisting of a tube section having a pulled-open base square defined by spaced apart corner folds, the base square being closed by folding over and adhering side flaps formed by the corner folds, a base cover sheet adhered to the side flaps to form a cross-bottom, an internal lock connected to confronting inner edges of the corner folds, confronting edges of the folded-over side flaps being spaced apart so that a channel is formed between end

faces of the side flap edges, the internal lock and the base cover sheet, and a strip of material having a hole in its central region forming a closure lock inserted in said channel to project beyond both ends of the cover sheet.

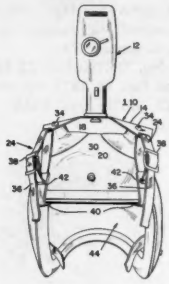
4,270,678
BREAD CARRIER
Clarence H. Drader, Box 18, R.R. #2, South Edmonton, Alberta, Canada (T6C 4E6)
Filed Jan. 31, 1980, Ser. No. 117,275
Int. Cl.[3] B65D *21/02, 6/18*
U.S. Cl. 294—169 **3 Claims**



1. A carrier for bread and the like comprising:
a plastic rectangular tray having floor means, spaced upstanding side walls and spaced upstanding end walls;
a pair of metal carrying bails pivotally connected to the side walls and extending along the oppositely disposed end walls, each of the bails being moveable between an upright position and a folded position;
each of the bails comprising a pair of spaced generally L-shaped leg members having upper and lower legs, the lower leg of each leg member being pivotally connected to the tray at a point spaced inwardly from the end wall such that the heel of the leg member, when the bail is in the upright position, is nested in a corner of the tray and, when the bail is in the folded position, protrudes above the upper edges of the side and end walls, said bail further comprising a horizontal handle member interconnecting the upper legs of the pair of leg members;
slot means in the floor means of the tray for receiving the upwardly protruding heels of the leg members of a second carrier stacked therebelow in a folded position wherby the peripheral walls of one carrier rest on the peripheral walls of the other; and
locking means on the tray for releasably locking the bails in the upright position.

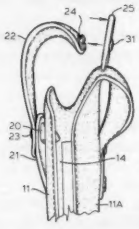
4,270,679
CAMERA MOUNT
Dennis M. Gildea, 45 Division St., North Quincy, Mass. 02169, and Peter Nota, 15 Spence Ave., Quincy, Mass. 02169
Filed Aug. 22, 1978, Ser. No. 935,857
Int. Cl.[3] A45C *1/04*
U.S. Cl. 224—181 **2 Claims**

1. A mount for a camera, the mount comprising:
(a) a flat, rectilinear base plate having first and second engagement means, upper and lower surfaces, a plane, a first angle portion and a second angle portion, the first and second angle portions being bent at an angle to the plane of the base plate, and spaced from each other, the first angle portion having the first engagement means associated therewith and the second angle portion having the second engagement means associated therewith, the lower surface having attachment means associated therewith, the attachment means comprising suction cups, each suction cup adapted to engage the exterior surface of protective headgear having a cup portion and a stem portion and a suction cup attached to the first angle portion and another suction cup attached to the second angle portion,
(b) affixation means associated with the base plate having means for engaging a camera and extending above the plane of the base plate, and



(c) adjustable connection means associated with the first and second engagement means whereby the affixation means is adapted to engage a camera and the connection means is adapted to engage the edge of the protective headgear near the open end thereby fixing the camera in spaced relation to the headgear when the headgear is worn by a human.

4,270,680
THUMB BREAK HOLSTER
John E. Bianchi, 1601 Wilt Rd., Fallbrook, Calif. 92029
Filed Oct. 10, 1979, Ser. No. 83,359
Int. Cl.[3] B23P *11/02*
U.S. Cl. 224—193 **6 Claims**



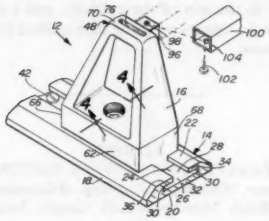
1. A thumb break front opening holster comprising:
a body of leather or leatherlike material folded to define a handgun receiving cavity including a top opening for receiving a handgun and a front opening for drawing the handgun;
a belt loop secured to one side of said body for mounting the holster on the belt of a wearer;
a handgun retaining strap secured at one end to the body on the side opposite said belt loop;
relatively rigid tab means separate from said body pivotally secured to a top region of said body adjacent to the top opening thereof, said tab means mounted for pivotal movement toward and away from the top opening of said body;
fastening means comprising a pair of mating parts, one of said parts attached to said tab means and the other of parts secured to said strap; and
said fastening means separable by movement of the wearer's thumb forward on drawing of the handgun.

4,270,681

SLIDABLE BRACKET FOR ARTICLE CARRIER

Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 836,966, Sep. 27, 1977, Pat. No. 4,132,335. This application Dec. 8, 1978, Ser. No. 967,568
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.³ B60R 7/00
U.S. Cl. 224—321 1 Claim



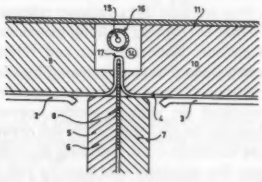
1. A tie-down bracket for an automotive vehicle mounted carrier having at least one slat affixed to the vehicle, the improvement comprising:
(a) a base section engageable with the slat;
(b) an upper section for facilitating securement of articles on the carrier;
(c) the upper section being interconnected to the base section;
(d) a slot formed in said upper section;
(e) a disc disposed entirely within said slot;
(f) a member for releasably engaging said track;
(g) a threaded shaft connected to said member and projecting upwardly therefrom, said shaft extending through a bore in the base section, the bore in communication with the slot formed in the upper section;
(h) said disc being threadably interconnected to the shaft, said disc having a tool engaging aperture formed therein; and
(i) said upper section having a through-bore in communication with said tool aperture permitting access of a tool to said aperture whereby said disc may be rotated to move the shaft mounted member into locking engagement with the slat.

4,270,682

SHEET RUPTURING

Yves Lavoisey, Asnieres, and Jean Nierlich, Antony, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed May 7, 1979, Ser. No. 36,654
Claims priority, application France, May 12, 1978, 78 14142
Int. Cl.³ B26F 3/06
U.S. Cl. 225—1 23 Claims



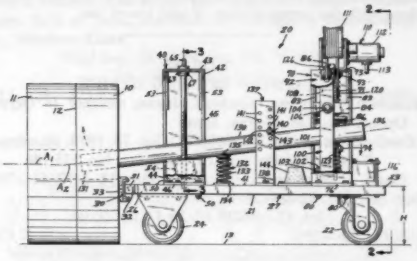
11. Cutting apparatus for cutting a sheet formed of at least one layer of plastic material comprising a thin rigid blade, means for creating stress on a small zone of the sheet by folding the sheet about the blade, and heating means disposed in spaced relation to said stress zone for selectively applying heat to said zone.

4,270,683

PORTABLE PAPER ROLL BREAKING MACHINE

David Crosby, P.O. Box 427, International Falls, Minn. 56649

Filed Oct. 1, 1979, Ser. No. 80,511
Int. Cl.³ B26F 3/00
U.S. Cl. 225—103 7 Claims



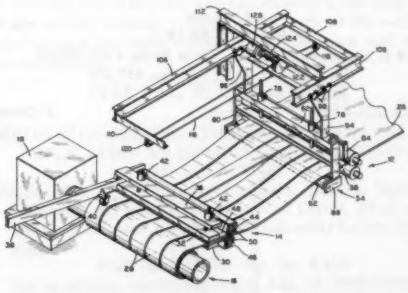
6. Roll breaking apparatus comprising, in combination:
a main lever having a first end, for insertion into one end of a paper roll to be broken from an axially abutting roll, and a second end remote therefrom;
a fulcrum arranged to support said main lever as a lever of the first class, the distance of said fulcrum from said first end of said main lever being less than its distance from said second end;
means enabling vertical adjustment of said fulcrum;
means resiliently supporting said second end of said lever;
means limiting the upward movement of said second end of said main lever;
and a striker assembly arranged to impact said second end of said lever downwardly at a site remote from said fulcrum, to suddenly apply upward force to said first end of said lever.

4,270,684

APPARATUS FOR HANDLING SHEET STEEL OR THE LIKE

Ford B. Cauffiel, 1400 Hastings Ave., Toledo, Ohio 43607

Filed Sep. 27, 1979, Ser. No. 79,384
Int. Cl.³ B65H 17/36
U.S. Cl. 226—162 4 Claims



3. Apparatus for engaging and moving leading edges of ribbons slit from an elongate sheet of steel from a slitter to a recoiler along a slitter line, said apparatus comprising a carriage having a frame, two elongate jaws mounted on said frame, one above the other, and extending transversely of the

ribbons, with the length of said jaws exceeding the width of the ribbons, a lower surface of the upper jaw being parallel to an upper surface of the lower jaw, means for moving the upper one of said jaws toward and away from the lower one to clamp the leading edges of the ribbons therebetween, means located above the lower jaw for supporting said carriage for movement between a position adjacent the slitter and a position adjacent the recoiler, power means for moving said carriage between the two positions of the slitter line, a roller carried by said frame immediately downstream of said lower jaw, said roller being parallel to said lower jaw, and having its uppermost peripheral surface in substantially a common horizontal plane with the upper surface of said lower jaw.

4,270,685

CAPSTAN BEARING DEVICE

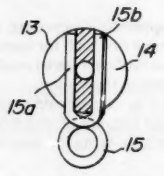
Kazuyasu Motoyama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 968,979, Dec. 13, 1978, abandoned. This application Feb. 29, 1980, Ser. No. 125,786

Claims priority, application Japan, Dec. 14, 1977, 52-150132; Dec. 16, 1977, 52-169129

Int. Cl.³ B65H *17/20;* **G11B** *23/04*

U.S. Cl. 226—194 **1 Claim**



1. A capstan bearing device for a tape recorder adapted to operatively engage therein a tape cassette comprising a chassis, a capstan shaft having flywheel means operatively attached thereto, a bearing member secured to said chassis for rotatably supporting said capstan shaft, said bearing including an extended part thereof arranged to extend into said tape cassette in operative engagement therewith, said extended part being formed partially of metal and partially of an oilless metal, a pair of opposed grooves formed in said bearing member, an annular groove formed in said capstan shaft adjacent said opposed grooves in said bearing member, and a coupling pin extending into said opposed grooves into engagement with said annular groove in said capstan shaft to absorb axial thrust in said capstan shaft.

4,270,686

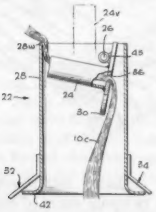
ROVING BRAKE

Robert L. Smith, 435 Fair Dr., Costa Mesa, Calif. 92626

Filed Dec. 5, 1977, Ser. No. 857,229

Int. Cl.³ B65H *23/28, 23/08, 59/12*

U.S. Cl. 226—195 **3 Claims**



1. A roving brake for controlling the movement of roving from a coil thereof that lies in a box, to a largely overhead guide, comprising:

a support which includes a cylinder for extending along a vertical axis, said cylinder having an outwardly flared lower end, a pair of bars on opposite sides of the cylinder, said bars having upper bar ends connected to said cylinder and lower bar ends for extending into the corners of the coil-holding box, and a pair of clamps on the outer sides of the bars for clamping to the box; and

a tube pivotally mounted on said cylinder between a vertical position wherein said tube is oriented with its axis largely parallel to the axis of the cylinder, and a tilted position wherein the upper end of the tube is tilted from said vertical position.

4,270,687

APPARATUS FOR DRIVING FASTENERS

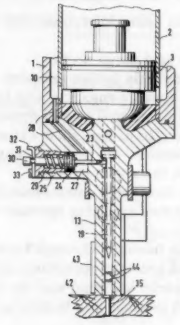
Werner Maurer, Nuertingen, Fed. Rep. of Germany, assignor to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 68,746

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838194

Int. Cl.³ B25C *1/04*

U.S. Cl. 227—113 **7 Claims**

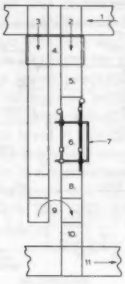


1. A driving apparatus for driving fasteners having shafts into a work piece, comprising housing means, fastener driving means in said housing means, said fastener driving means comprising driving rod means and ejector channel means, said driving rod means being movable in said ejector channel means between a rest position and a driving position, said apparatus further comprising magazine means operatively connectable to said housing means for supplying fasteners into said ejector channel means, separator means operatively arranged relative to said magazine means and said ejector channel means, said separator means including a separator member movable between a fastener stop position and a fastener releasing position, said apparatus further comprising holding means so positioned relative to said ejector channel means and relative to said separator means as to hold a fastener released by said separator member in said ejector channel means, said apparatus further comprising pressurized air storage means operatively connected to said fastener driving means for temporarily storing air under pressure resulting from a driving movement of said driving rod means for returning said driving rod means into said rest position with the aid of said air under pressure, and separator control means comprising cylinder means operatively connected to said pressurized air storage means and piston means in said cylinder means, said piston means being operatively connected to said separator member.

4,270,688
APPARATUS FOR MANUFACTURING GLAZING PANELS

Theo Janssens, Mol, and Victor Willems, Retie, both of Belgium, assignors to B. F. G. Glassgroup, Paris, France

Filed May 29, 1979, Ser. No. 43,029
Claims priority, application United Kingdom, Jun. 14, 1978, 26975/78
Int. Cl.³ C03C *27/08*
U.S. Cl. 228—5.1 25 Claims

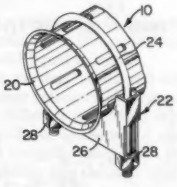


1. Apparatus for use in manufacturing a glazing panel including a pair of glazing sheets separated by an intervening marginal spacer frame formed to a required size and shape from strip material and marginally secured between the pair of sheets, comprising a frame forming mechanism which includes guide means defining at least two paths for feeding required lengths of such strip material, stop means defining a position for the leading ends of such strip material as it is fed, a plurality of bending stations arranged to bend such strip material on at least one said path to form frame corner angles at required distances from said stop means, and means for joining the ends of spacer strip material which has been fed along said paths and bent, thereby to form the frame.

4,270,689
METHOD OF FORMING A TUBE STRUCTURE FOR USE IN A LAP JOINT

Ray E. Canfield, Grinnell, Iowa, assignor to Donaldson Company, Inc., Minneapolis, Minn.

Division of Ser. No. 922,689, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 773,848, Mar. 3, 1977, abandoned. This application Sep. 14, 1979, Ser. No. 75,651
Int. Cl.³ B23K *31/06*
U.S. Cl. 228—152 6 Claims



1. A method of forming a tube structure for use in a lap joint for the exhaust system of an internal combustion engine, comprising the steps of:

(a) forming a plurality of apertures in a single row along a straight edge of a predetermined length of substantially flat steel stock, the apertures passing entirely through the steel stock, and the steel stock entirely surrounding each aperture in closed relation;

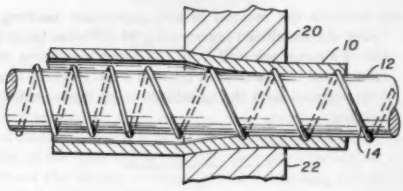
(b) rolling the length of substantially flat steel stock into a tubular form which defines at least one free end with the closed apertures disposed adjacent the free end, the rolled tube defining a longitudinal seam;

(c) and welding the rolled steel stock along the longitudinal seam to define a closed tube the free end of which is adapted to receive the free end of a smaller tube in overlapping relation and to define a lap joint therewith.

4,270,690
METHOD OF FORMING VARIABLY RIFLED TUBES

Thomas L. Mabery, East Ridge, and Francis B. Jackson, Chattanooga, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 10, 1979, Ser. No. 73,968
Int. Cl.³ B23P *15/26*
U.S. Cl. 228—173 F 10 Claims



1. A method for forming variable rifling in the inner wall of a tubular member comprising the steps of:

a. providing a mandrel having a lesser diameter than the internal diameter of the tubular member;

b. wrapping a wire-like member around the circumference of the mandrel so as to establish a predetermined pattern on the external surface of the mandrel corresponding to the pattern of variable rifling to be formed in the inner wall of the tubular member;

c. inserting the mandrel with the wire-like member wrapped thereon into the interior of the tubular member;

d. effecting a reduction in the diameter of the tubular member so as to cause the wire-like member to become embedded in the inner wall of the tubular member; and

e. withdrawing the mandrel from the interior of the tubular member thereby leaving the wire-like member embedded in the inner wall of the tubular member such that the embedded wire-like member functions to provide the inner wall of the tubular member with a pattern of variable rifling.

4. A method as set forth in claim 1 further including the step of attaching the ends of the wire-like member to the inner wall of the tubular member to prevent the ends of the wire-like member from becoming dislodged from the inner wall of the tubular member.

4,270,691
METHOD OF JOINING CERAMIC MEMBERS AND ITS APPLICATION TO OXYGEN SENSOR ELEMENT MANUFACTURE

Shinya Ishii, Toyoake; Takaharu Saito, Nagoya; Masahiko Sugiyama, and Takashi Kamo, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

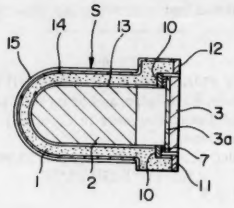
Filed Jan. 22, 1979, Ser. No. 5,459
Claims priority, application Japan, Aug. 18, 1978, 53-100691
Int. Cl.³ B23K *20/16*
U.S. Cl. 228—194 8 Claims

1. Method of forming an air-tight joint between ceramic members, comprising the steps of:

forming a metallized layer by metallizing treatment on each surface of ceramic members to be joined;

aligning the so formed metallized layers of the ceramic members; and,

diffusion-bonding said ceramic members by pressing them together under high pressure and high temperature conditions;



and wherein the method further comprises inserting between the metallized layers, prior to diffusion-bonding, a foil of a metal selected from the group consisting of the same metal as a metallized layer or a metal which forms a solid solution with the metallized layer during diffusion-bonding.

4,270,692

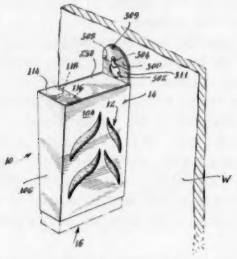
AIR DIFFUSER

George Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 17, 1980, Ser. No. 112,922

Int. Cl.[3] B65D *5/38, 13/06*

U.S. Cl. 229—11 **17 Claims**



1. A carton having a plurality of adjustable air passages comprising:

(a) a first tapered sleeve forming an outer carton unit, said first sleeve having a plurality of spaced openings therein and a plurality of panels forming a stop;

(b) a second tapered sleeve forming an inner carton unit, said second sleeve being nested within said first sleeve and being slidable between a first position and a second position, said second sleeve being closed at opposite ends and having a plurality of spaced openings therein arranged complementary to said spaced openings in said outer carton unit to align with the openings therein when said inner carton unit is in said first position in abutment with the stop in said first sleeve, and to align with the spaces between said openings in said outer carton unit when said inner carton unit is in said second position; and

(c) means shiftably mounted on at least one of said first and second tapered sleeves for selectively blocking sliding movement of said second tapered sleeve from said second position thereof to said first position thereof.

4,270,693

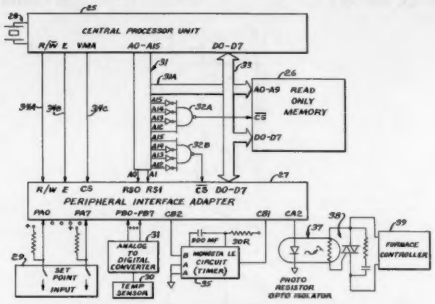
ELECTRONIC THERMOSTAT WITH HEAT ANTICIPATION AND CONTROL METHOD INCORPORATING SAME

Thomas E. Hayes, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Aug. 13, 1979, Ser. No. 66,484

Int. Cl.[3] F16C *1/24;* **F23N** *5/20*

U.S. Cl. 236—46 F **20 Claims**



1. Thermostat apparatus comprising: sensor circuit means responsive to ambient temperature for generating a digital electrical temperature signal representative of ambient temperature; set point means for generating a digital electrical set point signal representative of a desired temperature set point; data processor means receiving said temperature and set point signals for generating a composite signal from one of said temperature and set point signals comprising a first component signal representative of said one signal, a second offset component signal having a sense to reinforce the state of said output signal, and a third component signal comprising a time-varying signal having a slope opposite to the sense of said offset signal, said data processor means comparing said composite signal with the other of said set point and temperature signals for generating an output control signal when said composite signal reaches a predetermined value relative to said other signal; and control circuit means responsive to said output control signal for controlling a source of energy.

4,270,694

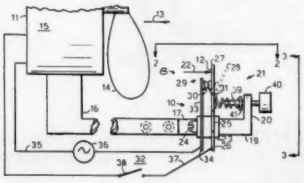
FLUID FLOW REGULATING SYSTEMS

Berthold A. Knauth, P.O. Box 2742, Daytona Beach, Fla. 32015

Division of Ser. No. 853,470, Nov. 21, 1977, Pat. No. 4,174,065, which is a continuation-in-part of Ser. No. 838,676, Sep. 30, 1977, abandoned, which is a continuation of Ser. No. 692,845, Jun. 4, 1976, abandoned. This application Jan. 29, 1979, Ser. No. 7,562

Int. Cl.[3] F04B *49/00;* **F24F** *11/04*

U.S. Cl. 236—49 **13 Claims**



1. A fluid flow regulating system comprising an electrically powered motor, a fluid impeller which is drivingly connected to and driven by the motor, said motor having a continuously energized operating speed, and a system for controlling the

speed of the motor to regulate the flow of fluid delivered by the impeller, said controlling system comprising an electric circuit connected to and for energizing the motor, said circuit having switching means for opening and closing the circuit to deenergize and energize the motor, a dynamic force sensing member which is movably mounted in the path for a stream of fluid delivered by the impeller to detect dynamic fluid flow forces applied to the member by fluid flowing into contact therewith, said switching means being automatically responsive to a movement of the member which reflects an applied dynamic fluid flow force in excess of a predetermined force level to open the circuit and deenergize the motor and to another movement of the member which reflects an applied dynamic fluid flow force less than said predetermined force level to close the circuit and energize the motor, said motor being acceleratable to a speed productive of an applied dynamic fluid flow force having said predetermined force level and being productive of an applied fluid flow force in excess of said predetermined force level at said continuously energized operating speed, whereby the motor is controlled to cyclically accelerate and decelerate in a speed range below said continuously energized operating speed and the impeller continuously delivers the fluid at a flow rate regulated in accord with the controlled speed of the motor.

4,270,695

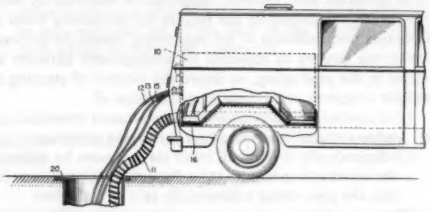
UNDERGROUND SERVICE MODULE

Miles T. Carson, 2390 W. Dartmouth at S. Zuni, Englewood, Colo. 80110

Continuation-in-part of Ser. No. 968,790, Dec. 12, 1978. This application Jul. 30, 1979, Ser. No. 62,021

Int. Cl.³ F24D *1/04*

U.S. Cl. 237—12.1 **9 Claims**



1. A service module, comprising:
a liquid cooled internal combustion engine;
a liquid cooled air compressor driven by said internal combustion engine;
an exhaust conduit for removing exhaust gases from said liquid cooled internal combustion engine;
a liquid reservoir;
a liquid circuit coupling liquid between said liquid cooled internal combustion engine, said liquid cooled air compressor and said liquid reservoir;
a heat exchange gas duct positioned in said liquid reservoir in heat exchange relationship with said liquid; and
an exhaust gas deflector positioned in said exhaust conduit responsive to the temperature of said liquid exiting said liquid cooled internal combustion engine for selectively deflecting exhaust gas through said heat exchange gas duct.

4,270,696

DRIP IRRIGATOR FOR HANGING BASKETS

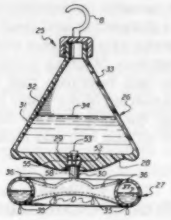
Odell Pointer, Jr., 1317 Finch St., Houston, Tex. 77009

Filed Sep. 4, 1979, Ser. No. 72,348

Int. Cl.³ A01G *9/02*

U.S. Cl. 239—38 **5 Claims**

1. A drip irrigator for a hanging basket plant container of the type adapted to be suspended from a hook or bracket and to hold aqueous solutions, said irrigator comprising a reservoir and a distributor disposed below the reservoir, said reservoir being of generally conical contour disposed with its small end upward and tapering downwardly to a broad bottom end having no openings therethrough other than a central opening which is flow connected to said distributor in a first position of the distributor, the distributor being disposed below and adjacent said reservoir and being in the general form of a relatively



thick disc having lateral dimensions approximately the same as said bottom end of the reservoir, said distributor having a central connector portion extending upwardly into the central opening of the reservoir in sealing relationship therewith, said distributor also having a bottom or base containing a multiplicity of small openings therethrough for the dripping of liquids, such multiplicity of small openings being disposed over a broad circular area of said base whereby their exudations wet a like size circular area of a hanging basket below

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4,270,697

IMPULSE-TYPE SINKING HYDRANT

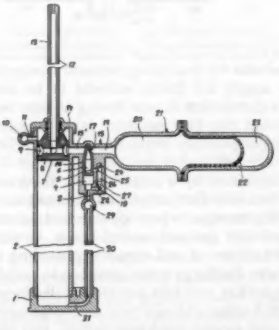
Vesselin Y. Georgiev, and Vladimir S. Mednikarov, both of Sofia, Bulgaria, assignors to Institute Po Mechanika I Biomechanika, Sofia, Bulgaria

Filed Apr. 12, 1979, Ser. No. 29,479

Claims priority, application Bulgaria, Apr. 17, 1978, 39446

Int. Cl.³ B05B *1/08*

U.S. Cl. 239—99 **3 Claims**



1. An impulse-type sinking hydrant comprising:
an upright cylindrical housing;
a closely-fitted piston in said cylindrical housing and movable between an upper and a lower position, said piston having at least one radial passageway;
an upright stem on said piston formed with a throughgoing first passageway communicating with said radial passageway, said stem extending above said housing in the upper position of said piston;
a pressure-accumulative reservoir provided at an upper end of said cylindrical housing and having a horizontal conduit formed with a secondary passageway communicating

with the interior thereof and which lies in axial alignment with said radial passageway in the upper position of said piston;

a first supply conduit communicating with said reservoir for feeding water under pressure thereto through a third passageway feeding into said second passageway and to the interior of said housing through a fourth passageway feeding into a lower end of said housing beneath said piston for displacing said piston into said upper position; and

a valve member movable independently of said piston vertically disposed in a chamber in said third passageway and displaceable by the water pressure from said first supply conduit into a radial passageway blocking position for allowing said water to feed into said reservoir, said valve member being displaceable by a lowering of the water supply pressure into a first supply conduit blocking position for allowing the water from said reservoir to feed into said radial passageway.

4,270,698

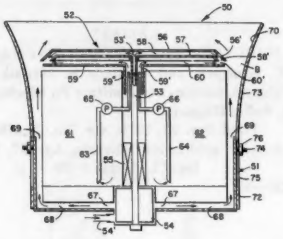
AEROSOL FORMING DEVICE

Karl Bisa, and Thomas Bisa, both of Am Wilzenberg 32, 5949 Grafschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 856,008, Nov. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 823,327, Aug. 10, 1977, abandoned, which is a continuation of Ser. No. 722,573, Sep. 13, 1976, abandoned, which is a division of Ser. No. 581,847, May 29, 1975, abandoned. This application Nov. 30, 1979, Ser. No. 98,835

Int. Cl.[3] **B64D** *1/18;* **B05B** *3/08*

U.S. Cl. 239—171 **9 Claims**



1. Apparatus for producing aerosols comprising means providing a supply for fluent material to be dispersed, means defining a distribution device having at least two first substantially parallel disc-like members axially separated by a first space and peripherally formed to provide a first substantially annular discharge outlet for said first space, a third disc-like member separated by a second space from one of said first disc-like members and peripherally formed to coact with said one disc-like member to provide a second substantially annular discharge outlet for said second space, means including the peripheries of two of said members providing a third substantially annular discharge outlet common to said first and second discharge outlets, said first and second discharge outlets being close to each other and said third discharge outlet surrounding said first and second discharge outlets, and said first, second and third discharge outlets having a substantially common axis, nozzle means for providing an annular stream of air moving axially substantially parallel to the said common axis of said discharge outlets and past said third discharge outlet, means defining an air feed passage to said second space whereby during operation air under pressure may be continually fed into said second space to provide a continuous substantially radially directed air stream through said second discharge outlet, means defining a material feed passage between said supply and said first space whereby during operation said material may be continually fed into said first space and transported through said first discharge outlet into said radially directed air stream to form a combined stream of air and material which in turn is substantially radially directed outwardly through said third discharge outlet into and through said axially moving air stream, and an annular baffle surface circumferentially surrounding said third discharge outlet and extending longitudinally therebeyond in the direction of flow of said axial air stream, said baffle surface being disposed in such radial outward location with respect to the third discharge outlet as to be in the direct path of and be impacted by the said stream of air and material thrown outwardly from said distribution device, and said baffle surface being an outwardly flared smooth surface providing an axial passage of changing cross section surrounding said third discharge outlet.

4,270,699

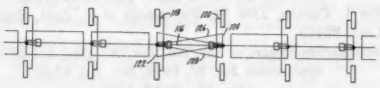
LATERALLY MOBILE IRRIGATION SYSTEM

David A. Siekmeier, 4616 60th St.; Glen L. Andersen, Box 1159, both of Columbus, Nebr. 68601; Arthur L. Zimmerer, deceased, late of Lindsay, Nebr.; by First National Bank & Trust Co., joint executor, Columbus, Nebr. 68644; by Bernadette Zimmerer, joint executor, Lindsay, Nebr. 68601, and William P. Zimmerer, 555 Westmont #144, San Luis Obispo, Calif. 93401

Filed Oct. 30, 1978, Ser. No. 955,941

Int. Cl.[3] **A01G** *25/09*

U.S. Cl. 239—184 **39 Claims**



1. In a linearly mobile irrigation system having a pipe string with sprinkler units thereon, supported at intervals by mobile towers, motor means on the towers for propelling them in a direction perpendicular to the pipe string, means for activating the tower motors in response to misalignment between segments in the pipe string; an improved method of steering said mobile irrigation unit comprising the steps of:

(1) independently driving at least two master towers at equal primary rates according to a prechosen program;

(2) dependently driving all other slave towers by activating the slave tower motors at such times as required to maintain the pipe string substantially in a straight line;

(3) sensing the overall location of the system with reference to a designated path;

(4) generating a correction signal when the system strays from the path;

(5) utilizing the correction signal to alter the primary rate of advancement of at least one master tower thus establishing differential rates for the master towers which cause the entire system to pivot in the desired direction; and

(6) releasing the correction signal to return the altered master tower to its primary rate as soon as the system begins to return to the designated path.

4,270,700

SECTORAL WATER SPRINKLER

Gerhard Brandl, Leonhardstrasse 79, A-80109 Graz, Austria

Filed Jul. 11, 1979, Ser. No. 56,779

Claims priority, application Austria, Jul. 18, 1978, 5214/78

Int. Cl.[3] **B05B** *3/04*

U.S. Cl. 239—231 **1 Claim**

1. A sectoral water sprinkler comprising

(a) a substantially vertical standpipe arranged to receive a stream of water under pressure,

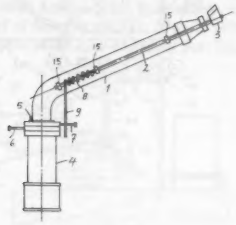
(b) a pair of abutments projecting from the standpipe and adjustable for defining therebetween a changeable angle determining a sector,

(c) a water transmitting pipe mounted rotatably on, and in communication with, the standpipe for rotation in a substantially horizontal plane, the water transmitting pipe

having a section extending from the standpipe in a plane oblique to the horizontal plane and being driven in a forward direction towards a first one of the abutments by the water pressure,

(d) a water spray nozzle mounted on an outer end of the water transmitting pipe section and dispensing a jet of water when the stream of water under pressure is received in the standpipe and transmitted through the water transmitting pipe,

(e) a shifting rod rotatably mounted on the water transmitting pipe and extending therealong for rotation about an axis transverse to the vertical standpipe, the shifting rod



having an inner end and an outer end projecting beyond the water spray nozzle,

(f) a return blade mounted on the outer shifting rod end, and

(g) a spring element having one end affixed to the inner end of the shifting rod, said one end being a coil spring wound about the inner shifting rod end, and another, free end forming a lever arm extending from the shifting rod into the sector determined by the pair of abutments whereby a sectoral sweep of the water transmitting pipe and nozzle is defined, the return blade being configurated and arranged to pass into and out of the path of the water jet during each sweep between the abutments.

4,270,701

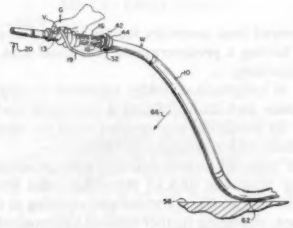
BUMPER

Valentine Hechler, IV, 26 Meadow View Rd., Northfield, Ill. 60093

Filed May 29, 1979, Ser. No. 43,457

Int. Cl.[3] **B05B** *15/06*

U.S. Cl. 239—288.5 **1 Claim**



1. The combination of a rigid, elongated, manually controlled liquid dispensing means having an inlet end and an outlet end, an elongated flexible liquid supply hose of substantially greater length than said liquid dispensing means which is adapted to extend from a horizontal support surface spaced beneath said liquid dispensing means to said inlet end when said liquid dispensing means is manually supported above said support surface, rigid coupling means extending between said liquid supply hose and said liquid dispensing means to rigidly, coaxially but releasably couple one end of said liquid supply hose to the inlet end of said liquid dispensing means, and a resilient bumper ring surrounding and extending over said rigid coupling means in the area where said rigid coupling means contacts said supply hose and abutting the inlet end of said liquid dispensing means when said liquid dispensing means is coupled to said supply hose, said resilient bumper ring having a major radial dimension which is greater than that of said liquid dispensing means and at least three times the diameter of the supply hose extending away from said coupling means and which is positioned closer to the center of gravity of said liquid dispensing means than to the center of gravity of the section of said supply hose adjacent said coupling means, the resilient bumper ring including a first circular section of said major radial dimension closely adjacent the inlet end of said liquid dispensing means and a second section of a lesser radial dimension than said first section but of a greater axial extent extending to a point adjacent said supply hose to supplement with said hose an opposing resilient weight leverage relation upon the bumper ring for urging the liquid dispensing means to reverse its downward movement and tilt upwardly about the major dimension of said first section when said first section contacts said support surface, the supply hose adjacent said coupling means in combination with said resilient bumper ring being of sufficient weight relative to the weight of said liquid dispensing means to pivot said liquid dispensing means about the fulcrum provided by said resilient bumper ring when said bumper ring initially contacts said support surface after said liquid dispensing means is allowed to free fall from a position above said support surface to move the outlet end thereof upwardly away from said support surface.

4,270,702

ADJUSTABLE ORIFICE AIR KNIFE

Charles B. Nicholson, Glens Falls, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Apr. 26, 1978, Ser. No. 900,141

Int. Cl.[3] **B05B** *1/32*

U.S. Cl. 239—455 **9 Claims**

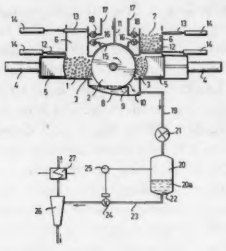
1. An adjustable orifice fluid knife comprising; a supporting structure adapted to be connected to a source of fluid, a passage network on the supporting structure terminating in an opening for transmittal of fluid from the fluid source and out of the opening, a nozzle assembly on the supporting structure in alignment with the opening for directing the flow of fluid therefrom in a controlled high velocity stream capable of acting as a knife, the nozzle assembly including a fixed plate on one side of the opening at the predetermined angle with respect to the opening and a bar assembly on the opposite side of the opening and including an adjustable blade of very thin highly flexible spring-like material on the blade assembly responsive to adjustment means at closely spaced points to be angularly substantially flexed with respect to the opening and the fixed plate to a variety of different positions at the same time at different closely spaced points to provide an adjustable variable gap along its length with each point being adjustable independent of other points along the length thereby providing simultaneously for a non-uniform range of orifice sizes between open and closed position along the length of the blade and within a short portion thereof in alignment with the opening for passage of fluid therethrough.

4,270,703

METHOD OF AND A GRINDER FOR DISCHARGING GROUNDWOOD STOCK WHEN GRINDING WOOD UNDER PRESSURE

Pekka O. Haikkala, Tampere, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Jan. 24, 1979, Ser. No. 6,155
Claims priority, application Finland, Feb. 16, 1978, 780515
Int. Cl.³ B02C *23/24*
U.S. Cl. 241—18 **2 Claims**



1. A method of continuously processing wood, comprising the steps of substantially continuously grinding the wood in the presence of water by means of a grinder which comprises a rotating grinding means disposed in a pressurized gas-filled grinding chamber and thereby forming a primary groundwood stock in the grinding chamber under superatmospheric pressure, passing the primary groundwood stock from the grinding chamber to a stick crusher while maintaining the stock under superatmospheric pressure, employing the stick crusher to crush sticks present in the primary groundwood stock, while maintaining the stock under superatmospheric pressure, thereby to produce a secondary groundwood stock under superatmospheric pressure, passing the secondary groundwood stock to a valve, while maintaining the stock under superatmospheric pressure, and continuously discharging secondary groundwood stock through the valve while preserving a hydraulic seal of secondary groundwood stock upstream of said valve.

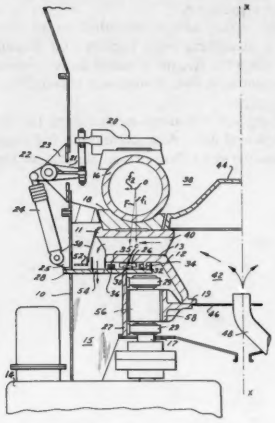
4,270,704

CRUSHER

Alain Chielens, Marcq-en-Baroeul, and Bernard Boussekey, Lille, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Dec. 12, 1978, Ser. No. 968,725
Claims priority, application France, Dec. 13, 1977, 77 37446; Apr. 28, 1978, 78 12614
Int. Cl.³ B02C *15/04*
U.S. Cl. 241—122 **10 Claims**

1. A crusher comprising
(a) a casing frame having a vertical axis and including
(1) a support affixed to the frame and extending radially inwardly from the frame,
(b) a table mounted on the support for rotation about the vertical axis, the table having arranged thereon
(1) an annular track, the frame support extending in a plane below the annular track,
(c) crushing elements rollingly supported on the track,
(d) means mounted on the casing frame for pressing the crushing elements against the track,
(e) a first series of bearings supporting the table on the frame support and
(f) a second series of bearings disposed substantially at the same level as the first series of bearings
(1) the table having a skirt defining a cylindrical surface coaxial with the annular track and the second series of bearings bearing against the cylindrical surface and



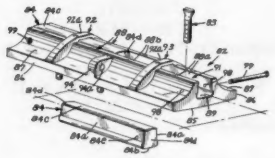
thereby maintaining the table in a stable lateral position with respect to the axis of rotation.

4,270,705

SHELL LINER ASSEMBLY FOR ORE GRINDING MILLS

Darrell R. Larsen, Salt Lake City, Utah, assignor to Minneapolis Electric Steel Castings Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 932,711, Aug. 11, 1978. This application Sep. 27, 1979, Ser. No. 79,382
Int. Cl.³ B02C *17/22*
U.S. Cl. 241—183 **21 Claims**



1. An improved liner assembly for the shell of an ore grinding machine having a predetermined rotational axis, the liner assembly comprising:
a plurality of longitudinal holder segments having first and second ends and each defining a mounting surface constructed for mounting engagement with the inner surface of said shell, and a grinding surface;
each holder segment further defining a longitudinal channel extending from one end to the other, said longitudinal channel having a closed bottom and opening at the grinding surface, and being further defined by longitudinal sides that converge at least in part toward the grinding surface;
a plurality of mounting openings formed in each holder segment and extending from the bottom of said channel to the mounting surface of the holder segments;
connecting means passing through the mounting openings for connecting each of said holder segments directly to the shell;
a plurality of longitudinal wear inserts for the holder segments, each insert being one piece and sized for lengthwise insertion into one of the longitudinal channels and having a cross section that substantially fills the channel so that the insert protectively overlies the connecting means, and each insert further comprising longitudinal sides that

converge at least in part in conformance with the channel sides so that the insert is retained within the channel independently of the shell;

the holder segments being arranged in the assembly with the longitudinal channels and wear inserts extending axially of the shell.

4,270,706

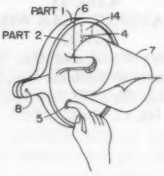
REVERSIBLE TOILET PAPER HOLDER

Gene P. Robinson, 4661 Larson Way, Sacramento, Calif. 95822

Continuation-in-part of Ser. No. 35,326, May 2, 1979, Pat. No. 4,241,885. This application Jun. 16, 1980, Ser. No. 159,863

Int. Cl.³ B65H *19/02*

U.S. Cl. 242—55.2 **7 Claims**



1. A rotatable dispenser suitable for wall or other surface mounting for holding a roller and toilet paper or other rolled material comprising, a turntable, said turntable having two spaced supporting arms for receiving the roller for the rolled material for rotation about the axis of the roller, means for rotatably retaining said turntable with freedom to rotate about an axis perpendicular to the axis of said roller in assembled position and latch means for holding said turntable in a desired dispensing position relative to said retaining means.

4,270,707

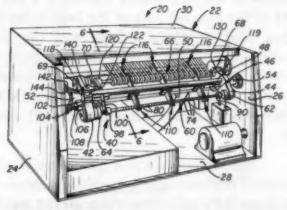
TYPEWRITER RIBBON SPOOL CORE SHAFT ADAPTER

Roger C. Sharlow, Plano, Tex., assignor to Liquid Paper Corporation, Dallas, Tex.

Filed Jul. 30, 1979, Ser. No. 62,013

Int. Cl.³ B65H *19/04*

U.S. Cl. 242—56.9 **24 Claims**



1. A system for driving a plurality of typewriter ribbon spool cores having irregular apertures therethrough, comprising:

a shaft supported for rotation,

a plurality of spacers keyed to said shaft for rotation therewith, and

a plurality of adapters separated by said spacers and having a bore therethrough for mating engagement on said shaft and an outer surface corresponding to the irregular aperture through the spool core for receiving the core thereon.

4,270,708

CABLE WINDER

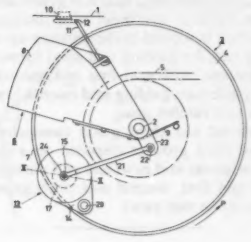
Klaas Vonk, Hoogeveen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,298

Claims priority, application Netherlands, Dec. 12, 1978, 7812061

Int. Cl.³ B65H *75/48*

U.S. Cl. 242—107.3 **1 Claim**



1. A cable winder, which comprises a casing, a cable drum mounted in the casing for rotation relative thereto, a spiral spring secured between the casing and the drum for automatically winding the cable on the drum, mechanism for latching the drum to prevent its rotation in a winding direction, means to deactivate said latching mechanism, a brake housing, a disc journalled in said brake housing, brake blocks pivotally mounted on said disc for engagement with said brake housing, a friction wheel coupled to said disc and drivable by the drum, said brake housing being rotatable about a pin disposed eccentrically relative to the disc and mounted in the casing, and means coupling the brake housing to the latching mechanism whereby the friction wheel is driven by the drum when the latching mechanism is deactivated.

4,270,709

DEVICE FOR PREVENTING EXCESSIVE TIGHTNESS OF SEATBELTS

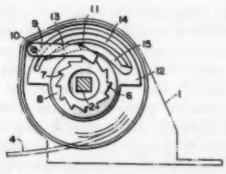
Mitsuo Inukai, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Aichi, Japan

Filed Sep. 23, 1976, Ser. No. 725,874

Claims priority, application Japan, Sep. 29, 1975, 50-133031

Int. Cl.³ A62B *35/00*; B65H *75/48*

U.S. Cl. 242—107.7 **5 Claims**



1. A seatbelt retractor comprising:

a frame;

a seatbelt pick-up spool rotatably coupled to said frame;

means for applying rotational torque to said spool in a winding-up direction;

a seatbelt wound on said spool;

at least one ratchet gear coupled to said spool;

a pawl pivotably coupled to said frame and engagable with said ratchet gear such that said spool is prevented from winding-up said seatbelt when said pawl engages with said ratchet gear;

a pin member provided on said pawl; and

means for selectively disengaging and engaging said pawl from said ratchet gear whenever said seatbelt is in a predetermined position, said means for selectively disengaging and engaging said pawl comprising a cam plate frictionally coupled to said ratchet gear and rotatable therewith, said cam plate having:

a first guide cam formed in said cam plate for guiding said pawl to move in the direction of disengagement when the cam plate rotates in the unwinding direction of said belt;

a second guide cam for guiding said pawl formed in said cam plate and continuous with said first guide cam, said second guide cam holding said pawl in a disengaged position when said belt is wound in the winding-up direction; and

a third guide cam for guiding said pawl formed in said cam plate continuous with said first and second guide cams, said third guide cam guiding said ratchet towards engagement with said ratchet gear;

said first, second and third guide cams comprising first, second and third grooves disposed on a surface of said cam plate adjacent said pawl and said pin member cooperates with said first, second and third grooves so as to selectively move said pawl.

4,270,710

RESILIENTLY COMPRESSIBLE BOBBIN

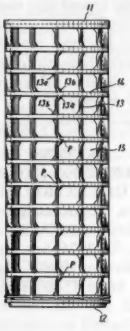
Nobutaka Ono, Ashiya, Japan, assignor to Osaka Bobbin Kabushiki Kaisha, Osaka, Japan

Filed Sep. 4, 1979, Ser. No. 72,531

Claims priority, application Japan, Apr. 27, 1979, 54/57924[U]

Int. Cl.³ B65H *75/14*

U.S. Cl. 242—118.11 **3 Claims**



1. A resiliently compressible bobbin comprising two end rings disposed opposite to one another and spaced a required distance apart from one another, a plurality of rectilinear longitudinal frames connecting the end rings which longitudinal frames are equidistantly distributed around the circumference of said end rings and are parallel with the central axis of the end rings, and a plurality of transverse ring frames equidistantly spaced apart from each other in parallel with and between the end rings, each of said transverse ring frames being annular and interconnecting the longitudinal frames, wherein said rectilinear longitudinal frames have inner and outer peripheral surfaces flush with the inner and outer peripheral surfaces of the end rings, respectively, and have a thickness gradient tapering, in a cross-sectional plane parallel with the end ring, from the radial center toward the outer periphery thereof, and are subdivided by the transverse ring frames into a number of longitudinal frame sections which each extend between an adjacently disposed end ring and transverse ring frame or between adjacently disposed transverse ring frames, wherein each said longitudinal frame section is, at the portions close to the connections thereof with said adjacently disposed end ring and transverse ring frame or with said adjacently disposed transverse ring frames, progressively increased in thickness in symmetrically opposite directions toward said connections and the midportion of said longitudinal frame section is narrowed between said portions, any contiguous two of said longitudinal frame sections having an intervening transverse ring frame therebetween are, at the respective portions on opposite sides of the intervening transverse ring frame, thickened increasingly in the same direction relative to said intervening transverse ring frame and wherein any contiguous two of said longitudinal ring frame sections that have therebetween an intervening transverse ring frame disposed adjacent to an end ring or located every two transverse ring frames from a said transverse ring frame adjacent to an end ring jointly define a V-shaped bend at the respective increasingly thickened portions on opposite sides of said intervening transverse ring frame, thereby providing a middle point between buckling-bending points when said bobbin is compressed.

4,270,711

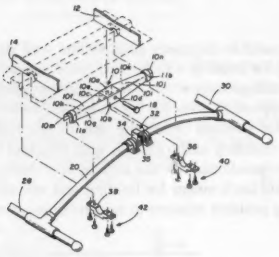
HELICOPTER LANDING GEAR WITH CROSSTUBE PIVOT

Wesley L. Cresap, Fort Worth, and Alan W. Myers, Burleson, both of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Jan. 29, 1979, Ser. No. 7,313

Int. Cl.³ B64C *25/52*

U.S. Cl. 244—17.17 **7 Claims**



1. In a helicopter having a pair of crosstubes forming a part of a landing gear where a first of the crosstubes is fixed to the helicopter's fuselage at a pair of laterally spaced points, the improvement comprising:

(a) a structural bridge fixed to said fuselage at a pair of laterally spaced points above the second of said crosstubes, and

(b) a pivotal connection between said structural bridge and the second of the crosstubes including a pin substantially parallel to the fore-aft axis of the helicopter and pivotally engaging said structural bridge and the second of the crosstubes, said connection of the structural bridge being at a point intermediate of the points of connection of said bridge to said fuselage to provide for pivotal action of said structural bridge about a median fore-aft axis of the helicopter.

4,270,712

METHOD AND APPARATUS FOR ROLLING CONTROL OF AIRPLANES BY MEANS OF SPOILERS

Jan von der Decken, and Heinz Max, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Dornier GmbH, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,447

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909244

Int. Cl.³ B64C *9/32, 13/32*

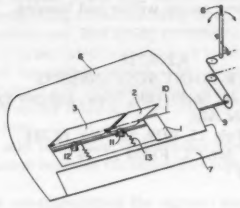
U.S. Cl. 244—90 A **4 Claims**

1. An apparatus for rolling control of an airplane by means of spoilers mounted at lift surfaces, comprising spoiler means

subdivided into at least three separate individual partial spoiler surfaces in succession in a span direction,

and means for suddenly adjusting said partial spoiler surfaces independently of each other from a zero position to a defined operative position, whereby a plurality of fixed, ladder-like control steps are effected.

3. A method for rolling control of an airplane by means of



spoilers mounted at lift surfaces, which comprises subdividing the entire control range into a plurality of fixed, ladder-like control steps,

and adjusting the individual control steps by suddenly adjusting a series of different partial spoiler surfaces, actuatable in dependence upon each other either individually or in combination, into at least two defined effective positions for the purpose of producing a rolling moment.

4,270,713

AIRPLANE WITH A BOAT-SHAPED FUSELAGE

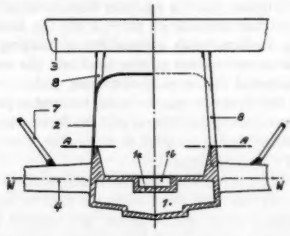
Claudius Dornier, Brunhamstrasse 21, 8000 Munich 60, Fed. Rep. of Germany

Continuation of Ser. No. 809,210, Jun. 23, 1977. This application Jul. 7, 1978, Ser. No. 922,618

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639982

Int. Cl.³ B64C *35/02*

U.S. Cl. 244—106 **10 Claims**



1. In a flying boat having a boat-like fuselage,

the improvement comprising a substantially horizontal separation of the fuselage above the water line, extending in the longitudinal direction essentially from the nose to the tail, into two structural parts which may be separately manufactured,

one of said parts being dish-shaped at the bottom and open and recessed at the top and being a complete boat body and the supporting part of the flying boat,

the other of said parts being dish-shaped at the top and open at the bottom, including a cabin part, and forming a roof for said fuselage,

and means securing said parts prefinished as units together to form a closed fuselage.

4,270,714

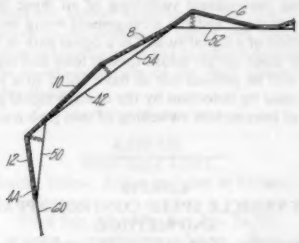
PARACHUTE CANOPY

Domina C. Jalbert, 170 NW. 20th St., Boca Raton, Fla. 33432

Continuation of Ser. No. 903,634, May 8, 1978, abandoned, which is a continuation of Ser. No. 460,036, Apr. 11, 1974, abandoned. This application Nov. 13, 1979, Ser. No. 93,328

Int. Cl.³ B64D *17/02*

U.S. Cl. 244—145 **12 Claims**



4. A parachute canopy with a skirt and crown having a plurality of gores; said gores having three types of construction, a first gore having a plurality of panels along its length from the skirt to the crown, a second gore on each side of the parachute canopy having a space at its rearward edge with respect to its adjacent gore to achieve rotational control, and a third gore having an opening means directed rearwardly to direct air from said parachute canopy to achieve directional stability; each gore having an identical top panel for forming the crown, each top panel including a built-in pocket to provide a built-in crown without the use of central shroud lines, each built-in pocket having a length extending along the length of the gore, each built-in pocket having a fixed built-in location of maximum camber along its length, each built-in pocket having its fixed built-in location of maximum camber located at a point outwardly from the center of its length and in a direction toward the skirt, said built-in crown being built-in inverted with each built-in pocket having its fixed built-in location of maximum camber located above the center of the crown.

4,270,715

RAILWAY CONTROL SIGNAL INTERLOCKING SYSTEMS

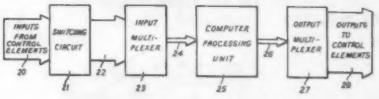
David J. Norton, and Christopher R. Brown, both of Chippenham, England, assignors to Westinghouse Brake & Signal Co., London, England

Filed May 23, 1979, Ser. No. 41,628

Claims priority, application United Kingdom, Jun. 10, 1978, 26665/78

Int. Cl.³ B61L *27/00*

U.S. Cl. 246—5 **9 Claims**



1. A control system comprising:

a plurality of remote elements operative to alternative states by control signals,

status indicating means connected to each remote element and arranged to provide a status signal indicative of the state occupied by the element,

a plurality of signal paths each having an input end and an output end, each input end being connected to a status indicating means to carry the status signal therefrom,

input circuit means connected between the output ends of

the signal paths and a control signal generating means for generating the control signals for operating the remote elements, and

switching means comprising a plurality of signal switches, each connected in a respective signal path and arranged to be operated in accordance with a signal from an oscillating signal source, for, when operated, forcing the signal carried by said signal path into a predetermined test state,

said control signal generating means including means for detecting intermittent switching of an input signal path into a safe state, and the arrangement being such that by connection of a signal switch in a signal path in front of at least the input circuit means then at least said input circuit means will be proved not to have failed to a potentially unsafe state by detection by the control signal generating means of intermittent switching of said path into said safe state.

4,270,716

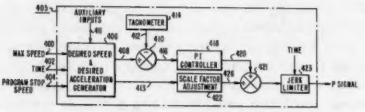
TRANSIT VEHICLE SPEED CONTROL APPARATUS AND METHOD

Larry W. Anderson, West Mifflin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1979, Ser. No. 25,512

Int. Cl.³ B61L *3/06*

U.S. Cl. 246—182 B **12 Claims**



1. In speed control apparatus for a transit vehicle having an actual speed signal and operative with a track having a speed command signal, the combination of

first means comprising an open loop acceleration controller for providing a predetermined desired acceleration signal in response to said speed command signal,

second means for providing a desired speed signal in response to said speed command signal,

third means comprising a closed loop speed controller for providing a speed control signal in response to the difference between said desired speed signal and said actual speed signal, and

fourth means responsive to the sum of said desired acceleration signal and said speed control signal for controlling the speed of said transit vehicle.

4,270,717

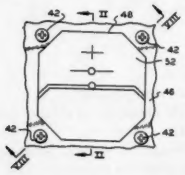
ELASTOMERIC INSTRUMENT CLAMP

Neil R. Upham, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Aug. 17, 1979, Ser. No. 67,275

Int. Cl.³ G12B *9/00*

U.S. Cl. 248—27.1 **3 Claims**



1. A clamp for mounting instruments within a panel comprising, in combination, an annular housing having an inner surface having an axis and defining an opening for receiving an instrument casing, a plurality of elongated elastomer elements mounted on said housing spaced about the periphery of said opening and adjacent said inner surface and having their lengths disposed substantially parallel to said housing inner surface axis, and individual compression means associated with each elastomer element for selectively compressing and expanding the associated element to deform the element inwardly of said inner surface into engagement with an instrument casing within said housing opening for resiliently supporting the instrument casing within said housing.

4,270,718

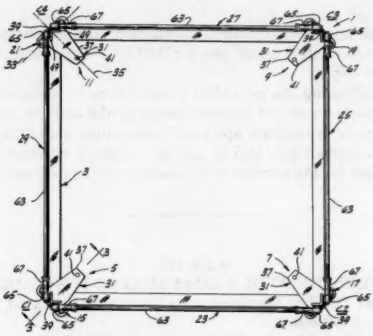
FOUR-POINT SUSPENSIONS

William R. Conner, Jr., Shelbyville, Tenn., assignor to Kellwood Company, St Louis, Mo.

Filed Feb. 15, 1979, Ser. No. 12,281

Int. Cl.³ F16M *11/24*

U.S. Cl. 248—188.3 **6 Claims**



1. A four-point suspension for a load comprising:

first, second, third and fourth support means for the load, said support means being located at the corners of a quadrilateral, said support means being adapted to bear on a supporting surface at four points for supporting the load above said surface;

each support means having an individual connection with the load for transmission of force from the load to said supporting surface, each connection permitting relative up and down movement of the load and the respective support means at the respective corner,

the first and third support means being located at two opposite corners of the quadrilateral and the second and fourth support means being located at the other two opposite corners of the quadrilateral,

first means interconnecting the first and second support means for transmitting force from the first to the second support means on movement of the first support means in one direction relative to the load and for transmitting force from the second support means to the first support means on movement of the second support means in one direction relative to the load,

second means interconnecting the second and third support means for transmitting force from the second to the third support means on movement of the second support means in one direction relative to the load and for transmitting force from the third support means to the second support means on movement of the third support means in one direction relative to the load,

third means interconnecting the third and fourth support means for transmitting force from the third to the fourth support means on movement of the third support means in one direction relative to the load and for transmitting force from the fourth support means to the third support

means on movement of the fourth support means in one direction relative to the load,

and fourth means interconnecting the fourth and first support means for transmitting force from the fourth to the first support means on movement of the fourth support means in one direction relative to the load and for transmitting force from the first support means to the fourth support means on movement of the first support means in one direction relative to the load,

said first, second, third, and fourth interconnecting means each comprising a link extending along a respective side of the quadrilateral, and acting on upward movement of any support means relative to the load to effect upward movement of the support means at the opposite corner of the quadrilateral and downward movement of the other two support means relative to the load for four-point support of the load,

each of said individual connections comprising a pivotal connection between the respective support means and the load,

each link interconnecting the support means at the ends of the respective side of the quadrilateral,

the said pivotal connection at each corner of the quadrilateral being on an axis extending along a line perpendicular to a vertical plane bisecting the angle formed by the two sides of the quadrilateral intersecting at the corner.

4,270,719

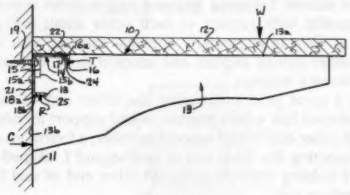
SHELF BRACKET

Harlan F. Kellogg, 1617 Sprucewood, Rockford, Ill. 61107

Filed Aug. 1, 1979, Ser. No. 62,700

Int. Cl.³ A47G *29/02*

U.S. Cl. 248—235 **2 Claims**



1. In a shelf bracket adapted for mounting at the rear end thereof on an upright support surface, the shelf bracket including an elongated shelf bracket member having spaced side faces and a top shelf supporting surface and a rear abutment surface extending perpendicular to the top shelf supporting surface adjacent the lower rear portion of the shelf bracket member, the shelf bracket member having a rear recessed surface above and offset forwardly from the rear abutment surface, the shelf bracket member having a first notch extending downwardly from the top shelf supporting surface and spaced forwardly from the rear recessed surface and defining inner and outer opposed notch walls extending between the side faces of the shelf bracket member, the shelf bracket member having a second notch extending forwardly from the rear abutment surface and spaced below the top shelf supporting surface and defining upper and lower opposed notch walls extending between the side faces of the shelf bracket member, a shelf attaching bracket including a rear leg and an upper leg arranged in a generally L-shaped configuration, the rear leg having an upper mounting plate portion spaced rearwardly from said rear recessed surface and a keyhole shaped opening in said upper mounting plate portion for receiving a headed mounting fastener, said upper leg extending forwardly from the upper end of the rear leg in overlying relation to the bracket member and having a first depending tongue at its forward end adapted to extend into said first notch, a second forwardly extending tongue on the lower end of said rear leg adapted to extend into said second notch in the shelf bracket member, said first and second tongues being generally flat and having a thickness less than the spacing between the opposed notch walls of the respective first and second notches, the improvement wherein the first tongue has a protrusion on the side engageable with the outer notch wall of the first notch at a location below the upper leg to press the first tongue against the inner notch wall of the first notch and the second tongue having a protrusion on the side engageable with the lower notch wall at a location forwardly of the rear leg to press the second tongue against the upper notch wall of the second notch whereby to inhibit bending of the first and second tongues relative to the respective upper and rear legs of the shelf bracket attaching member and to inhibit movement of the shelf bracket member laterally of the shelf attaching bracket after assembly thereof.

4,270,720

BRACKET UNIT

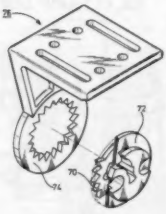
Shigeki Fukuchi, Tokyo, Japan, assignor to Metako Kigyo Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1979, Ser. No. 74,751

Claims priority, application Japan, Sep. 12, 1979, 53/125937[U]

Int. Cl.³ A47H *1/10*

U.S. Cl. 248—269 **8 Claims**



1. A suspension assembly for the shaft of a window shade or the like, comprising an arrangement of plate like elements coaxially secured about a central axis in side by side relationship with one another, consisting of a base element, a peripherally toothed element and a shaft receiver element having a slot extending from its periphery generally arcuately toward the central axis, and; a bracket adapted to be secured to a fixed support, said bracket having a plate like portion in which is formed an aperture having an internal edge of a diameter and tooth configuration conforming to that of the peripherally toothed element to receive the same coaxially therein, in any position of rotation about the central axis.

4,270,721

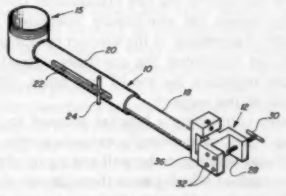
INSTRUMENT SUPPORT

Ross F. Mainor, Jr., P.O. Box 104, Logansport, Ind. 46947

Filed Sep. 22, 1978, Ser. No. 944,959

Int. Cl.³ E04G *3/00*

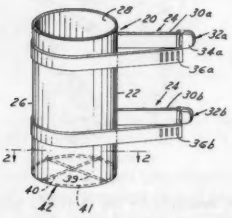
U.S. Cl. 248—285 **4 Claims**



1. Apparatus for releasably attaching a surveying instrument to a vertical column, comprising:

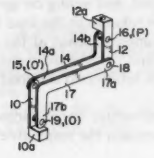
(a) a tubular arm having an outer sleeve, an inner sleeve slidable within said outer sleeve, and a locking mechanism for fixing said outer sleeve relative to said inner sleeve;
(b) clamping means at one end of said arm, said clamping means including a generally U-shaped base including a pair of legs, an adjustable clamping screw threadedly engaging one of said legs;
(c) universal joint coupling means connecting said arm to said clamping means, said universal joint including locking means for holding said arm in fixed orientation;
(d) means carried by said arm remote from said clamping means for connecting a surveying instrument thereto;
(e) a level indicator carried by said arm; and
(f) a clamping member adapted for releasably attachment to a massive vertical column and carrying a projecting flange adapted for engagement by said clamping means.

4,270,722
FIRE EXTINGUISHER HOLDER
Leonard E. Batchelder, 21111 22 Mile Rd., Mount Clemens, Mich. 48044
Filed Mar. 20, 1978, Ser. No. 888,012
Int. Cl.³ A47F 5/00
U.S. Cl. 248—310 **4 Claims**



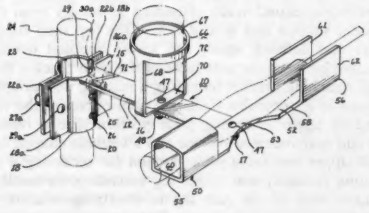
1. The fire extinguisher holder to be positioned against a support comprising:
an impact resistant cylindrical container open at each end for receiving a fire extinguisher loosely therein where said container has a length greater than its width and a construction similar to that of the fire extinguisher to be placed therein to provide protection for the fire extinguisher from impacts;
fire extinguisher within said container;
supporting means comprising a base integrally secured to one end of the cylindrical container for supporting the fire extinguisher within the cylindrical container and having triangular openings with the apex of the triangle directed radially inward;
said cylindrical container having an opening in the wall of said container extending vertically downward from the end without the support and is sufficiently wide for insertion of the hose of the fire extinguisher therethrough;
mounting means for non-fixedly releasably retaining the cylindrical container to the support comprising adjustable means for tightening the container against a fixed part without requiring the use of bolt holes, welds, or other changes to the support;
said means comprising a bracket secured to the container having a pair of outwardly extending tabs, one on each side of said opening in the wall and a pair of elongated rod means, each of which passes through one of said tabs and which may be adjustably tightened against said tab for holding the container against the support while directing said wall opening toward a recess in the support.

4,270,723
PANTOGRAPH MECHANISM
Naoyuki Takahashi, Hino, and Toshihiko Kadota, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1979, Ser. No. 2,247
Claims priority, application Japan, Feb. 18, 1978, 53/17132
Int. Cl.³ F16M 13/00
U.S. Cl. 248—421 **4 Claims**



1. A pantograph mechanism, comprising:
a first generally planar leg member comprising a first L-shaped link, a holding member and a first pivot joint, said first pivot joint connecting one end of said first L-shaped link and one end of said holding member so they are rotatable with respect to each other about said pivot joint in a generally coplanar manner; said first member having another end adapted to hold an object mounted thereon:
a second generally planar leg member comprising a second L-shaped link identical in size and shape to said first L-shaped link, a support member and a second pivot joint, said second pivot joint joining one end of said support member and one end of said second L-shaped link so that said second L-shaped link and said support member are rotatable with respect to each other about said second pivot joint in a generally coplanar manner; said support member having another end adopted to be mounted on a stationary support;
a third pivot joint connecting the other end of said first L-shaped link with a portion of said support member near said other end of said support member; a fourth pivot joint connecting the other end of said second L-shaped link to said holding member near said other end of said holding member; and
said pantograph mechanism being moveable into a position in which said first and second leg members oppose each other face-to-face along substantially the entire length of each.

4,270,724
HOLDING DEVICE
Donald A. McMullen, 2143 Hulton Rd., Verona, Pa. 15147
Filed May 24, 1979, Ser. No. 42,018
Int. Cl.³ F16M 13/00
U.S. Cl. 248—534 **4 Claims**



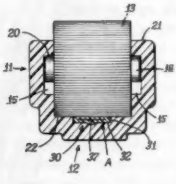
1. For attachment to a portable chair having a leg of fixed thickness and width, a holding device comprising a bracket having an elongated body portion and a flange portion inte-

grally formed with said body portion and disposed generally normal thereto, said body portion having, along the axial length thereof, a plurality of apertures disposed transversely therethrough in spaced relationship to each other; a plate member generally conforming in size and shape to said flange portion and cooperative therewith to engage said leg therebetween; connecting means detachably securing said bracket to said plate to secure said device to the leg interposed therebetween and support said body portion therefrom; and holder means adapted to support one or more preselected objects in space relationship to said leg, said holder means comprising a base plate having a first end, a second end, locator means formed in said base plate intermediate said ends and extending downwardly therefrom for cooperative engagement in one of said apertures for detachably securing said holder means to said body portion, an inverted U-shaped bracket secured to said base plate adjacent said first end, and a pair of upstanding flanges secured in spaced generally parallel relationship to each other adjacent said second end, said locator means comprising an aperture defined through said base plate on the axial centerline thereof substantially midway between said first and said second end, and a detachably securable bolt extendible through said aperture and one of said apertures in said body portion to attach said holder means to said body portion while permitting the selective pivotal action of said holder relative thereto.

4,270,725
ROLLER CLAMP FOR DEFINING A FLOW LUMEN IN TUBING

James W. Scott, Lindenhurst; Joseph A. Bancsi, Vernon Hills, both of Ill., and Jean Kersten, Villers St Amand, Belgium, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 27, 1979, Ser. No. 98,220
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—6 **7 Claims**



1. In a roller clamp for controlling fluid flow through flexible tubing, the clamp having an elongated U-shaped body with rigid opposite upstanding walls joined by a base, a cylindrical roller having an axle mounted at its opposite ends in tracks formed in the walls, the tracks having axle bearing surfaces extending coplanar with one another and parallel to said base, the improvement comprising:

a roller bearing surface in said base spaced uniformly below the axle bearing surfaces of the track a distance to obtain a biased fit between the roller and roller bearing surface by the axle snugly engaging the axle bearing surface on the body to substantially prevent movement of the roller perpendicular to said base and to permit only longitudinal movement of the roller upon application of a manual force to the roller in a direction along the body;

surfaces forming a tube-compression slot in said base including a lower wall spaced uniformly below the level of said roller bearing surface along the body, the tube-compression slot having at least one shoulder joining the lower wall of the slot to the roller bearing surface;

surfaces forming a channel in the lower wall of the tube-compression slot, the channel receiving a portion of the tubing to form a controlled lumen having a cross-sectional configuration substantially the same as that of the cross-sectional configuration of the channel; and

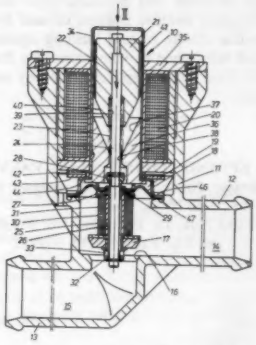
said channel further having a cross-sectional area which varies progressively from one position along the base to another in the direction of said longitudinal movement,

thereby enabling adjustment of liquid flow through the lumen of the tubing confined within the tube-compression slot and said channel depending on the position of the roller along the body, from the large flow to no flow, substantially without unintended perpendicular movement of the roller along the body and with minimal change in flow over time at any selected position of the roller.

4,270,726
VALVE ARRANGEMENT, ESPECIALLY FOR CONTROLLING FLOW OF HOT WATER THROUGH A HEATING DEVICE FOR MOTOR VEHICLES

Wilhelm Hertfelder, Steinenbronn; Erich Junginger, Stuttgart, and Ernst Linder, Mühlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 16,062
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810211
Int. Cl.³ F16K *31/02*
U.S. Cl. 251—30 **11 Claims**



1. A valve arrangement, especially for controlling flow of hot water through a heating device for motor vehicles, comprising a housing having an inlet chamber and an outlet chamber communicating with each other through an opening forming a valve seat; a valve member movable between an open position spaced from said valve seat and a closed position engaging said valve seat; means for moving said valve member between said positions thereof and comprising an electromagnet having a magnet coil coaxial with said valve seat, a dip armature axially movable within said coil in valve closing direction upon energizing of said coil, spring means cooperating with the armature and biasing the same in valve opening direction, a rod coaxially fixed to said armature and extending through and beyond said valve member, a sleeve arranged with radial clearance about a portion of said rod to be axially movable with respect thereto and having a lower end portion to the outer periphery of which said valve member is fixed and an upper end portion forming an auxiliary annular valve set, a flexible membrane having an inner peripheral portion fixed to the outer periphery of said upper end portion of said sleeve and an outer peripheral portion fixed to said housing to form to one side of said inlet chamber a control chamber, an auxiliary valve member to said rod between said armature and said sleeve and engaging during movement of said rod in valve closing direction said auxiliary valve seat before said valve member engages said valve seat; a throttle opening in said member providing communication between said control chamber and said inlet chamber and having an open cross section dimensioned so that during movement of said valve member to said closed position

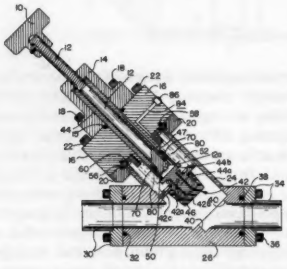
a quick flow of water from said inlet chamber into said control chamber and therewith a pressure equalization between said two chambers will be produced and so that during movement of the valve member to said open position with preceding movement of said auxiliary valve member away from said auxiliary valve seat more water will flow out of said control chamber through said clearance between said sleeve and said rod into said outlet chamber than can flow from said inlet chamber into said control chamber through said throttle opening; an insert mounted in said housing between said armature and said membrane, said insert being provided with a bore through which said rod extends with clearance, said spring abutting with one end against said insert and with its other end against said armature; a bushing in said housing, said armature and said insert being located in said bushing, said bushing having an outer closed end and an inner peripheral surface coaxial with said armature and guiding the latter for movement in axial direction, the interior of said bushing communicating with said control chamber and being filled with water, said bushing having at its end facing said membrane an annular flange and spaced from said flange a radially outwardly extending annular shoulder, said housing having a radially inwardly extending annular portion spaced from said shoulder; an annular pressure plate resting on said shoulder; and means for pressing said annular flange fluid-tightly against the corresponding annular portion of said membrane and comprising spring means between said pressure plate and said radially inwardly extending annular portion of said housing so as to press the annular flange of said bushing against said annular portion of said membrane by simultaneously fluid-tightly sealing the water filled interior space formed by said bushing and said membrane.

4,270,727

SPRING LOADED PLUG VALVE

Arthur E. Norman, Northridge, Calif., assignor to Torr Vacuum Products, Inc., Van Nuys, Calif.

Filed Nov. 13, 1978, Ser. No. 959,940
Int. Cl.³ F16K *31/50, 31/122*
U.S. Cl. 251—63.4 **12 Claims**



1. A valve assembly including: a housing defining an inlet and an outlet, and further defining a seat positioned within the housing between the outlet and the inlet; a poppet valve mounted in the housing and movable between an open position displaced from said seat and a closed position; a plastic plug member secured to said poppet valve for engaging said seat in sealed relationship therewith when the poppet valve is closed; an elongated member reciprocally movable in said housing along a linear axis; first means coupling one end of said elongated member to said poppet valve; second means coupled to said elongated member for pulling said poppet valve to its open position and for moving said poppet valve to its closed position; and resilient means coupled to said poppet valve for maintaining a positive force on said poppet valve when said poppet valve is in its closed position in the presence of any deformation of said plastic plug said elongated member comprises a sleeve, said second means includes a stem movably mounted in said housing and extending through said sleeve in coaxial relationship with said sleeve, said stem has an enlarged end section for coupling said stem to said one end of said sleeve to enable the stem to pull the poppet valve to its open position, the movement between the end of the sleeve and the enlarged section provides lost motion, and the enlarged section abuts the end of said sleeve to lock said poppet valve in said closed position.

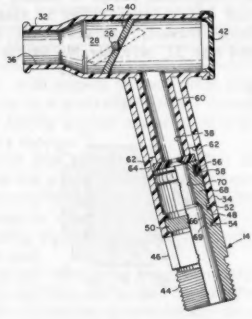
10. The valve assembly defined in claim **1**, and which includes cylinder means, a piston coupled to said elongated member and movable in said cylinder means, and means for introducing pressurized fluid into the cylinder means for causing said elongated member to move within the valve housing.

4,270,728

BLOCK MOUNTED AUTOMOTIVE HEATER CONTROL VALVE

Kirk Peloza, Glen Ellyn, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 19, 1979, Ser. No. 76,892
Int. Cl.³ F16K *51/00*
U.S. Cl. 251—143 **5 Claims**



1. A fluid valve mountable to an engine block of an internal combustion engine, said valve comprising:

(a) housing means, said housing means defining a fluid passageway having an inlet portion and an outlet portion;

(b) valve means operably connected to said housing means for valving fluid flow through said fluid conduit;

(c) said inlet portion having a hollow end section formed of a heat deformable material;

(d) means for mounting said fluid valve to said engine block, said mounting means including a metallic tubular member, said tubular member having a first portion adapted for connection to said engine block and a second portion received in said hollow end section of said conduit inlet portion, said second portion having a heat receiving zone and a heat sink zone adjacent said heat receiving zone, said heat receiving zone having a mass substantially less than said heat sink zone, said heat receiving zone including external surface means which have the material of said inlet portion deformed and received therein and engaging with said hollow end section for connecting said hollow end section to said mounting means; and

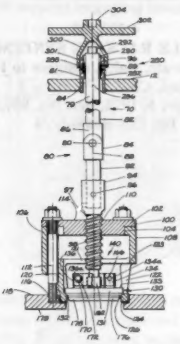
(e) seal means disposed intermediate the external surface of said heat sink zone and the internal surface of said hollow end section for effecting fluid pressure sealing therefrom.

4,270,729

TOP OPERATED TANK CAR CLAPPER VALUE

Gunter R. Behle, and David P. Hillstead, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 13, 1978, Ser. No. 969,024
Int. Cl.³ F16K *27/03*
U.S. Cl. 251—144 **8 Claims**



1. A top operated tank car lading valve assembly including a railway tank car; a top rod extending to the top of the tank; said rod attached to a valve stem in the lower portion of the tank; said stem being externally threaded and engaging a horizontally extending internally threaded valve sleeve; said sleeve engaging a generally vertically extending valve cage and vertically extending fasteners holding said sleeve in engagement with said cage; said cage extending above a tank car bottom outlet mounting flange; said flange having a flange opening therein; said flange located in an opening in the tank bottom; said cage having vertically extending legs and circumferentially spaced openings between said legs for lading flow; a valve seat for a vertically movable valve closure located within said cage; said valve closure movable between open and closed positions relative to said seat; said closure having at least a pair of laterally spaced vertical projections extending upwardly into said cage; a pair of formed stem retainer members each having a pair of slots at opposite ends to receive one of said projections, and a semi-circular center slot to receive said valve stem; fastening means extending through said retaining members and said projections to hold said projections in place within said retainer members; said semi-circular slots defining a cavity to receive and engage a cylindrical slightly smaller lower end portion of said stem; said fastening means further holding said stem retainers in abutting relation to said projections with a fit sufficiently tight that substantially eliminates horizontal and angular movement of the stem relative to the valve closure.

4,270,730

MEANS TO RETAIN A VALVE STEM

John M. Hinrichs, Bryan, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

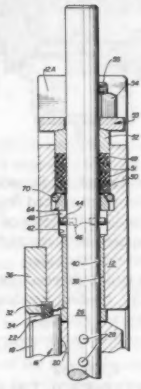
Filed May 29, 1979, Ser. No. 43,554
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—214 **8 Claims**

8. In a butterfly valve structure having a valve body defining a valve chamber and a movable valve member mounted in the valve chamber for rotative movement between open and closed positions, a stem mounted within a bore in the valve body communicating with the valve chamber, said stem being connected to the movable valve member and having an outer end portion extending outwardly of the valve body, and means operatively connected to the outer end portion of the stem to rotate the valve member between open and closed positions;

an improved means mounted within said bore to retain the stem in the valve body comprising:

a stop member on said stem extending radially outwardly from the outer periphery of the stem, a packing in the bore positioned axially outward of the stop member adjacent the outer periphery of the stem, an adjustable packing retainer engaging the packing to compress the packing, said bore having an intermediate diameter enlarged bore portion receiving said stop member and a large diameter enlarged bore portion receiving said packing;

an annular groove formed in said bore at the juncture of the intermediate and large diameter enlarged bore portions axially and radially outwardly of said stop member between said stop member and said packing, said annular



groove being of a diameter greater than the large diameter enlarged bore portion and defining an outer peripheral wall surface and upper and lower shoulders adjacent said peripheral wall surface, a wedge ring mounted in said groove and seated on said lower annular shoulder, said wedge ring being of an outer diameter less than the diameter of said large diameter enlarged bore portion for fitting therein; and

ring retaining means mounted in the groove between the wedge ring and the upper annular shoulder defined by the groove to retain the wedge ring within the groove, whereby upon an outer axial movement of the stem said stop member contacts said wedge ring and said wedge ring is wedged tightly against said ring retaining means to restrain the outer axial movement of the stem.

4,270,731

VALVE WITH NON-BINDING SPOOL

George J. Jackson, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 30, 1979, Ser. No. 34,322
Int. Cl.³ F16K *11/07*
U.S. Cl. 251—309 **4 Claims**

1. In a hydraulic assembly including a valve, the combination of:

a body (40);

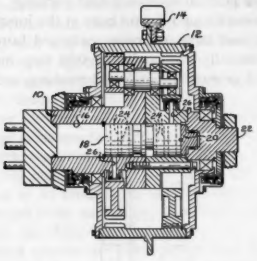
an elongated chamber (42) having a wall and a conduit (60) in said body;

a valve spool (44) movable within said chamber;

means (48) for moving said spool within said chamber;

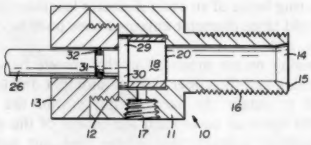
an elongated sleeve (60) within said chamber and spaced from the wall thereof, said sleeve movably receiving said spool in substantially fluid tight relation and having at least one port (52) for fluid flow with flow through the port being controlled by the position of the spool within said sleeve;

resilient means (56) spacing said sleeve from said wall and yieldably supporting said sleeve within said chamber;
yieldable means (62,64,66,68,70,72) establishing fluid communication between said port in said sleeve and said conduit in said body;
said yieldable means including a pipe (64), flanged at one end (66), connected at its other end (68) to said port and having said flanged end extending into said conduit in spaced



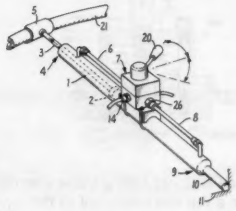
relation to the sides thereof, said conduit having an annular shoulder (70) facing but spaced from, said flanged end and disposed intermediate the ends of said pipe; and
a resilient seal (72) disposed between and sealingly engaging said flanged end and said shoulder;
whereby deflection in said body need not cause deflection in said sleeve whereby binding tendencies between said spool and said sleeve are avoided.

4,270,732
FLUID CONTROL VALVE
James C. Redman, 847 Cleveland Ave., Amherst, Ohio 44001
Filed Sep. 17, 1979, Ser. No. 76,215
Int. Cl.[3] F16K *5/04*
U.S. Cl. 251—310 **3 Claims**



1. A fluid control valve consisting of:
a cylindrical housing having a longitudinal bore and a radial bore;
a resilient expandable split sleeve having end edges and side edges and being continuous between said edges, said side edges being spaced from each other to define a split oriented longitudinally of said sleeve, said split being large relative to the diameter of said sleeve and extending for the entire length of said sleeve, said sleeve being progressively thicker circumferentially from one side edge to the other side edge with said one side edge being the thickest portion of said sleeve and said other side edge being the thinnest portion of said sleeve, said sleeve including notches defined in one of said end edges and having an external diameter at least as great as the internal diameter of said longitudinal bore, said sleeve being positioned within said longitudinal bore to be coaxial with said longitudinal bore and rotatable about a longitudinal centerline of said sleeve;
a control stem longitudinally positiond partially within said longitudinal bore, said stem having tabs on one end thereof, said tabs extending radially of said longitudinal bore, said tabs being engaged with said notches so that rotation of said stem causes corresponding rotation of said sleeve;
a support means holding said stem in said housing;
said split in said sleeve fluidly connecting said longitudinal bore with said radial bore and being the only means of such fluid communication whereby the control valve is shut off when said split is not in communication with said radial bore.

4,270,733
CABLE RACKING SYSTEM
Harold F. DePue, Novato, Calif., assignor to Hydraulic Energy Company, San Rafael, Calif.
Filed Nov. 3, 1978, Ser. No. 957,544
Int. Cl.[3] B66F *3/24*
U.S. Cl. 254—93 R **1 Claim**



1. A cable racking system comprising
a double acting hydraulic cylinder having a piston, a packed rod-end and blind-end;
a piston rod connected at one end to the position and extending through the packed rod-end of the cylinder;
a cable seat mounted on the other end of the piston rod outside of said cylinder;
said seat being generally arcuately channel shaped and further defining a curved surface generated from a point axially inward from the rod end outside of said cylinder for supporting and retaining a section of cable in a curve while said rod is being extended;
an elongated foot mounted to the blind end of said cylinder for bracing said cylinder against an anchor;
first conduit means communicating hydraulic fluid to and from the cylinder on the rod-end side of the piston; second conduit means communicating hydraulic fluid to and from the cylinder on the blind-end side of the piston; a hydraulic system including pump means providing pressured hydraulic fluid at high pressure level and reservoir means for the hydraulic fluid at a lower pressure level;
control valve means mounted on the cylinder in one mode supplying high pressure hydraulic fluid to the cylinder at one side of the piston and simultaneously exhausting fluid from the other side of the piston to said reservoir in order to move said piston and piston rod assembly and in another mode holding existing pressure on both sides of the piston in order to maintain the condition of extension of the piston and piston rod assembly.

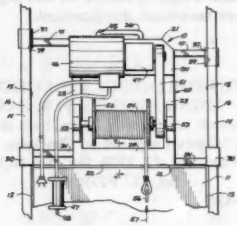
4,270,734
PORTABLE WIRE PULLER
Larry A. Straight, N. 2815 Pittsburg, Spokane, Wash. 99207
Filed Mar. 14, 1980, Ser. No. 130,360
Int. Cl.[3] E21C *29/16*
U.S. Cl. 254—134.3 R **8 Claims**

1. A portable wire puller for pulling electrical wire in a prescribed direction substantially parallel to two spaced elongated supports with each support having a forwardly facing surface and an oppositely facing back surface, said wire puller comprising:
a rigid frame having opposed sides joined by spaced ends in

which the distance between the opposed sides is less than the distance between the elongated supports to enable the rigid frame to fit between the spaced elongated supports;

a first pair of support engaging brackets mounted to the frame adjacent one frame end and adapted to extend laterally outward from the opposed sides to engage the spaced supports along the forwardly facing surfaces thereof;

a second pair of support engaging brackets mounted to the



frame adjacent the other frame end and adapted to extend laterally outward from the opposed sides to engage the spaced supports along the back surfaces thereof;

winch means on the frame having a winch drum located thereon between the first and second pairs of brackets and spaced forwardly from the frame sides beyond the bracket pairs, for payingout and taking up an elongated winchline and for producing a clamping force on the support members as the winchline is taken up to pull electrical wire in the prescribed direction.

4,270,735

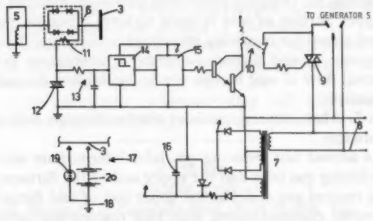
ELECTRIFIED FENCE SWITCHING DEVICE

Bruce M. Gavin, 88 Joseph St., Invercargill, New Zealand, assignor to Bruce Malcolm Gavin and Nelson James Hubber, both of Invercargill, New Zealand

Filed Oct. 24, 1979, Ser. No. 88,104

Int. Cl.³ H05C *1/00*

U.S. Cl. 256—10 **4 Claims**



1. An electrified fence generator switching device comprising a physically separate D.C. pulse means and a switching circuit said switching circuit comprising a D.C. detector feeding a bistable switch circuit in parallel with a storage capacitor provided to temporarily maintain the state of the bistable circuit when the generator is switched OFF, said bistable switch circuit controlling a switching means control coupled to or adapted for control coupling to the generator, an input to the detector adapted for connection to the fence being coupled for electrification by the generator and incorporating a voltage integrator A.C. filter means and a D.C. voltage isolation means to isolate the generator from the fence when connected as aforesaid to the device.

4,270,736

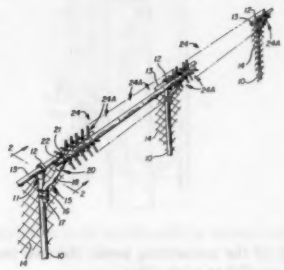
CLIMB INHIBITING RAIL

Fred O. Burch, 3024 Avenue N, Plano, Tex. 75074

Filed Sep. 17, 1979, Ser. No. 75,942

Int. Cl.³ E04H *17/00*

U.S. Cl. 256—12 **1 Claim**



1. A climbing inhibitor assembly for a fence structure of the type having a top rail member (13) supported between a pair of upstanding, laterally spaced posts (10), said climbing inhibitor assembly comprising:

a tubular bearing member (22) mountable on adjacent fence posts (10) in offset-parallel relation to the top rail member (13) of said fence structure;

a series of turn cylinders (24A) mounted for rotation on said tubular bearing member (22), said turn cylinders (24A) being disposed in end-to-end relation, the length of each turn cylinder (24A) being relatively short as compared with the length of the tubular bearing member 22 whereby frictional forces and binding caused by curvature or sagging of the tubular bearing member (10) will be minimized; and,

a plurality of separate spine-like members (26) integrally molded with and extending radially outwardly the surface of each turn cylinder (24A), said spine-like members (26) each comprising a yieldable material having a relatively short enlarged base portion for structural integrity and a relatively long, narrow, flexible portion having a relatively rounded tip (27) for causing discomfort but avoiding injury to the limb of a climber engaged with said spine-like members (26).

4,270,737

SECURING FENCING MATERIAL TO POSTS

Julian R. H. Binns, and Kenneth H. Grange, both of London, England, assignors to Binns Fencing Limited, London, England

Filed Nov. 13, 1979, Ser. No. 94,185

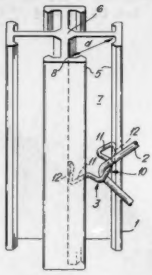
Claims priority, application United Kingdom, Nov. 21, 1978, 45437/78

Int. Cl.³ B21F *27/00*

U.S. Cl. 256—48 **9 Claims**

1. Fencing comprising a fence post having an opening, fencing material, and securing means securing the fencing material to the post, the said securing means comprising a resiliently-deformable clip which is inserted into said opening in the post and rotated through an angle to snap into a stable position in which it resists rotation and also resists being pulled out of the opening, said clip being generally 'S'-shaped and comprising (a) a central portion, (b) two connecting arms which extend

from opposite ends of the central portion in opposite but generally parallel directions, and (c) two end arms which extend one



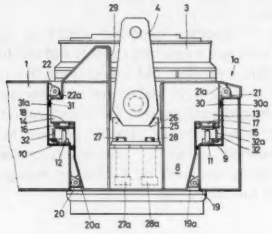
from each of the connecting arms, the two end arms being generally parallel to each other.

4,270,738

CASTING LADLE MOUNTING FOR STEEL STRAND CASTING PLANTS

Siegfried Dangeleit, Krefeld, and Klaus Neumann, Duisburg, both of Fed. Rep. of Germany, assignors to DeMag Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 823,635, Aug. 11, 1977, abandoned.
This application Jun. 25, 1979, Ser. No. 51,870
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636658
Int. Cl.³ C21B *3/00*
U.S. Cl. 266—99 **12 Claims**



1. In a mounting for a casting ladle, particularly for use in a steel strand casting plant with a support column and a revolving turret on said column, and having

(a) one or more ladle mountings cantilevered from said turret;

(b) each said ladle mounting having a recess for a casting ladle;

(c) each recess having opposed support recesses for loading crane loops on said ladles;

the improvement in each said ladle mounting characterized by

(d) the said ladle mounting being U-shaped with a body and opposed legs forming said recess;

(e) a longitudinally extending weighing frame for a ladle mounted in opposed positions on each of said legs;

(f) a dynamic test cell positioned between each end of each weighing frame and said ladle mounting;

(g) said dynamic test cells supporting their respective weighing frame in a vertical direction on said legs;

(h) a plurality of positioning and guiding connections between each said weighing frame and said ladle mounting preventing relative horizontal movement therebetween; and

(i) each said weighing frame having one said crane loop support recess;

(j) said plurality of positioning and guiding connections including a plurality of cooperating projections disposed between each said weighing frame and said ladle mounting;

(k) said projections disposed in at least two horizontal planes vertically spaced from each other; and

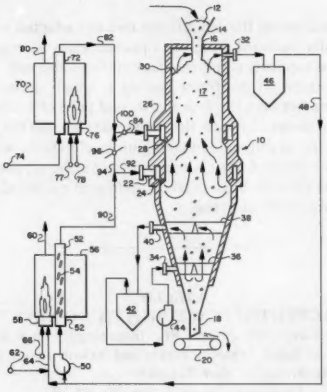
(l) positioning means disposed between said projections and said legs permitting frictionless relative vertical displacement of said weighing frames on said legs while preventing relative horizontal displacement.

4,270,739

APPARATUS FOR DIRECT REDUCTION OF IRON USING HIGH SULFUR GAS

William A. Ahrendt, and Donald Beggs, both of Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Filed Oct. 22, 1979, Ser. No. 86,980
Int. Cl.³ F27B *9/12*
U.S. Cl. 266—156 **4 Claims**



1. Apparatus for direct reduction of iron oxides to a metallized iron product, said apparatus comprising:

(a) a generally vertical shaft furnace;

(b) means for charging particulate iron oxide material to the upper portion of said furnace to form a burden therein, and means for removing metallized iron product from the bottom of said furnace, whereby a continuous gravitational flow of said burden can be established through the furnace;

(c) a first hot reducing gas inlet intermediate the ends of the furnace;

(d) a second hot reducing gas inlet intermediate said first reducing gas inlet and the upper end of the furnace;

(e) a reacted gas outlet at the upper end of said furnace;

(f) means communicating with said reacted gas outlet for cooling and scrubbing reacted gas;

(g) a reformer furnace with catalyst-containing tubes therein, for the formation of gaseous reductants, an inlet to said reformer communicating with said cooling and scrubbing means, an outlet from said reformer, a first conduit communicating with said reformer outlet and said first reducing gas inlet, and a second conduit communicating with said reformer outlet and said second hot reducing gas inlet;

(h) a process gas heater;

(i) a source of process gas communicating with said heater; and

(j) a third conduit communicating with said heater and said second reducing gas inlet.

4,270,740

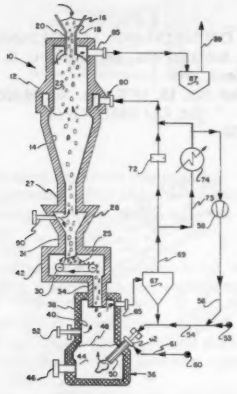
APPARATUS FOR PRODUCING MOLTEN IRON BY SUBMERGED COMBUSTION

Charles W. Sanzenbacher, Charlotte, N.C., and John C. Scarlett, Toledo, Ohio, assignors to Midrex Corporation, Charlotte, N.C.

Division of Ser. No. 58,037, Jul. 16, 1979, Pat. No. 4,238,226. This application Jun. 5, 1980, Ser. No. 156,850

Int. Cl.³ F27B *15/00*

U.S. Cl. 266—157 **10 Claims**



1. Apparatus for reducing particulate iron oxide and producing molten iron comprising:

(a) a generally vertical shaft furnace having means for admitting particulate burden material at the top thereof and means for removing particulate material from the bottom thereof, means intermediate the ends of the furnace for introducing a hot reducing gas to the burden therein, and means for withdrawing spent reducing gas from the top thereof;

(b) a melter-gasifier vessel having a molten metal bath therein, means for admitting particulate materials to the top thereof, heating means for melting said particulates in said vessel and means for withdrawing molten product from said vessel, said vessel being in sealed relationship with the discharge end of said shaft furnace;

(c) conduit means for introducing oxygen and fossil fuel into said bath beneath the surface of said bath;

(d) gas humidifying means in the wall of said vessel above the molten metal bath for cooling and humidifying gases from said bath within said vessel; and

(e) a gas passageway communicating with said vessel and said hot gas introducing means in said furnace.

4,270,741

DOOR VISE

Paul N. Hurst, 5125 Colorado Blvd., Fort Worth, Tex. 76118

Filed Dec. 26, 1979, Ser. No. 106,472

Int. Cl.³ B25B *11/00*

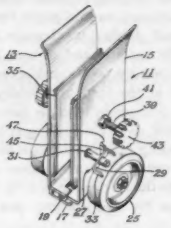
U.S. Cl. 269—17 **6 Claims**

1. An improved vise for supporting and transporting a thin object, such as a door, in an upright position, comprising in combination:

a pair of jaws, each jaw having an upright member and a base extending at an angle with respect to the upright member;

a hinge securing the jaws together at the bases, allowing the upright members to pivot toward and away from each other;

spring means for urging the upright members away from each other, the thin object adapted to be carried on an edge between the upright members, the weight of the thin object overcoming the spring means and drawing the upright members toward each other to support the thin object; and



a wheel mounted to each jaw for rolling contact with a floor to transport the thin object.

4,270,742

PAPER STACK BINDING AND FOLDING DEVICE

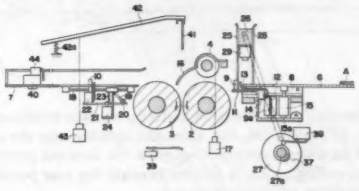
Hiroshi Kobayashi, No. 35-22, 3-chome, Shimorenjaku, Mitaka-City, Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,195

Claims priority, application Japan, Mar. 27, 1978, 53/35156; Mar. 28, 1978, 53/34974

Int. Cl.³ B41L *43/12*

U.S. Cl. 270—37 **5 Claims**



1. In a paper stack binding and folding device comprising a paper stack feed table inclined so as to dispose the upper edge rearwardly of the lower edge of said table and having a paper abutment ruler at said lower edge, said table further having a horizontal slit in the center of the table;

a paper stack feed mechanism mounted on said table and having a paper stack feed pawl adapted to extend above said table and retract below the table through said slit for feeding paper stacks in a feed direction toward a leading end of said feed table;

a stapling mechanism positioned at the leading end of said table and including stapler guns to eject staples to a paper stack and a cauking member for cauking free ends of said staples ejected from said stapler guns;

a binding position control stop means positioned adjacent and downstream of said stapling mechanism in the feed direction of said paper stack for holding said paper stack fed from said feed table in a predetermined binding position;

a paper stack folding mechanism positioned downstream of said stop means in the feed direction of said paper stack and having a pair of parallel and spaced folding rolls to define a gap located below the plane of said feed table therebetween and a paper stack folding piece positioned above said gap to push said bound paper stack into said gap to thereby fold the bound paper stack; and

a paper stack folding position control stop means positioned downstream of said paper stack folding mechanism in the feed direction of said paper stack for holding said bound paper stack in a predetermined folding position, character-

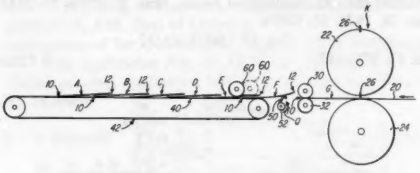
ized by said paper stack feed table inclines at an angle over 60° with respect to the horizon, a paper stack folding position control table disposed in substantially the same inclined plane as said paper stack feed table, said paper stack binding and folding position control stop means are disposed in succession on said paper stack folding position control table, said stapling mechanism is positioned at and extends from the leading end of said feed table and said pair of folding rolls are positioned between and inclined at the same angle as the feed and folding position control table, whereby said paper stack is bound when the paper stack is positioned over the folding rolls and held in position by said binding position control stop means and after the binding operation the bound paper stack is pushed into said gap between the folding rolls to be folded while being held in position by said folding position control stop means.

4,270,743

FORWARD NUMBERING OR UNDERLAP SHEET DELIVERY

Charles P. Crampton, Hamilton, Ohio, assignor to Hamilton Tool Company, Hamilton, Ohio

Filed Jun. 29, 1978, Ser. No. 920,364
Int. Cl.³ B65H *39/06*
U.S. Cl. 270—58 **14 Claims**



1. A device for delivering in underlap echelon relationship a plurality of similar size, flat, sheet-like articles onto the upper reach of an endless conveyor wherein the forward portion of each succeeding article is located beneath the rear portion of each preceding article, comprising:

means for continuously and sequentially providing a plurality of individual, similar size, flat, sheet-like articles of uniform length adjacent the upstream end of an endless conveyor;

means in advance of the upstream end of said conveyor for accelerating the rate of travel of each individual article toward the upstream end of said conveyor and depositing it on an upper reach thereof;

means between said last mentioned means and the upstream end of said conveyor for elevating the trailing edge of that individual article whose leading edge and forward portion has been last deposited onto the upper reach of said conveyor such that the leading edge of the next succeeding article is deposited on the upstream end of the upper reach of said conveyor beneath the elevated trailing edge of the preceding article; and

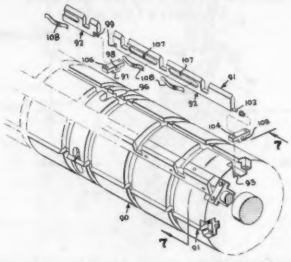
a rotatably driven slow down roll at the upstream end of the conveyor for limiting the amount by which the leading edge of each succeeding article is advanced under and relative to the undersurface of the preceding article last deposited on the conveyor, the periphery of the slow down roll being operative to exert pressure against the upper surface of the last article deposited on the conveyor, intermediate the length of said article to provide an abutment transversely of said article which is engaged by the leading edge of the next succeeding article as it is advanced beneath and forwardly of the trailing edge of the preceding article, the slow down roll being movable toward and away from the upstream end of the conveyor for varying the degree to which the leading edge of the next succeeding article is deposited on the upstream end of the upper reach of said conveyor beneath the elevated trailing edge of the preceding article.

4,270,744

TUCKERS ON MECHANICAL FOLDING ROLLS

John F. Trogan, Ashland, Wis., assignor to C. G. Bretting Mfg. Co. Inc., Ashland, Wis.

Filed Jun. 15, 1979, Ser. No. 49,035
Int. Cl.³ B65H *45/16*
U.S. Cl. 493—430 **2 Claims**



1. In a paper folding machine for towels, paper napkins and the like, having a width, said paper folding machine including a frame, a pair of first and second co-acting oppositely rotating rolls supported in said frame, means for rotating said rolls in opposite directions relative to one another, cam means operatively connected to each of said rolls, each of said rolls including cooperating tuckers and grippers, said grippers, including a stationary jaw and a movable jaw, the tuckers and grippers on said rolls being arranged in alternate locations relative to each other along the periphery of said rolls;

the improvements which comprise including in said machine;

a plurality of longitudinally extending recesses in each of said rolls;

gripper shafts mounted in said recesses, each said movable jaw being mounted on one of said gripper shafts;

each of said stationary jaws being disposed in the trailing portion of one of said longitudinally extending recesses, facing one of said movable jaws, each of said stationary jaws being provided with a bevelled surface opposed to a working face on said movable jaw;

longitudinally extending L-shaped grooves on each of said rolls between each of said longitudinally extending recesses, each of said tuckers being mounted in one of said L-shaped grooves;

each of said tuckers terminating in a tip having an inclined face along its trailing edge;

spring means to resiliently urge said inclined face toward the bevelled portion of said fixed jaw when said tucker and said gripper are brought into engagement by rotation of said oppositely rotating rolls;

each of said tuckers including a tucker blade comprising individual segments, each of which has a length equal to the width of the paper article to be folded;

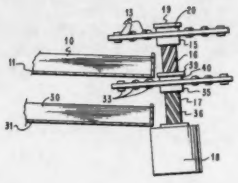
and wherein said segments are provided with slots, and including a pair of leaf springs received in said slots exerting pressure on said segments to pivot the same.

4,270,745

MULTIPLE STACK ROLL-WAVE SHEET SEPARATOR APPARATUS

Harrold R. Woodard, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,647
Int. Cl.³ B65H *3/06, 3/44*
U.S. Cl. 271—9 **11 Claims**



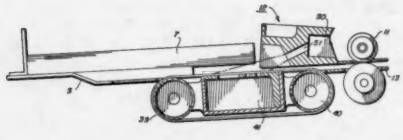
2. Sheet separating apparatus comprising:
means for supporting a first and a second stack of sheets,
sheet separating means mounted adjacent to said stacks comprising:
a rotatable shaft,
a first helical peripheral thread coaxial with said shaft formed along a portion of said shaft proximate said first stack,
a second helical peripheral thread coaxial with said shaft formed along another portion of said shaft proximate said second stack and having a direction opposite to that of said first thread,
a first follower rotatable about the axis of said shaft following said first thread,
a second follower rotatable about the axis of shaft following said second thread, and
means for rotating the shaft in a selected one of two directions,
whereby said first follower is driven into engagement with an outermost sheet in said first stack when said shaft is rotating in a selected one of said two directions and the second follower is driven into engagement with an outermost sheet in said second stack when the shaft is rotating in a selected direction.

4,270,746

SHEET SEPARATOR

Thomas J. Hamlin, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,497
Int. Cl.³ B65H *1/06, 3/12*
U.S. Cl. 271—98 **1 Claim**



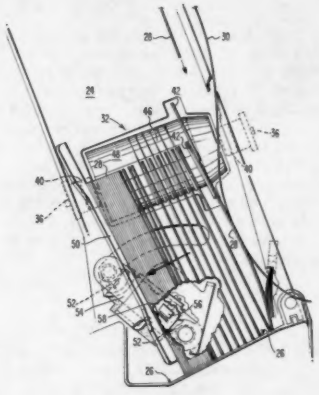
1. A bottom sheet separator-feeder for separating and forwarding sheets seriatim comprising;
a stack tray adapted for supporting a stack of sheets to be fed, said stack tray having a "U" shaped pocket formed therein;
a plurality of vacuum feed belts disposed in said pocket beneath said tray adapted to pull the bottom sheet in the stack into the pocket and feed the sheet from beneath the sheet stack;
a portion of the center belt of said vacuum feed belts being spaced approximately 0.117 inches above the remainder of said belts such that when the bottom sheet in the stack is forced into contact with said belts, a temporary corrugation is formed in the sheet; and,
an air knife disposed at an angle of approximately 21° to the plane of said stack tray adjacent the front of said tray to inject air between the bottom sheet in the stack, said air knife having a plurality of spaced discharge orifices therein, said air knife being located relative to the front edge of the sheet stack such that the discharge orifices are spaced approximately 0.500 inches above the plane of the vacuum feed belts and approximately 0.950 inches from the lead edge of the sheet stack for optimum separation of the bottom sheet from the remainder of the sheets in the stack.

4,270,747

DOCUMENT PACKING SYSTEM

William B. Templeton, Howell, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 31, 1979, Ser. No. 108,599
Int. Cl.³ B65H *29/42*
U.S. Cl. 271—179 **10 Claims**



1. A document packing system for closely packing sorted documents into a pocket of a document sorting system having many pockets, comprising:
a hollow, cylindrical auger having multiple, discontinuous, raised helicies to initially engage documents sorted into the pocket;
a stationary means, within the hollow cylindrical auger, for rotating the auger;
means, integral with the auger, for secondarily engaging and packing the sorted documents into the pocket; and
means within each pocket, resiliently responsive to the packing of documents into the pocket, for supporting sorted documents within the pocket.

4,270,748

MODULARIZED SLIDE

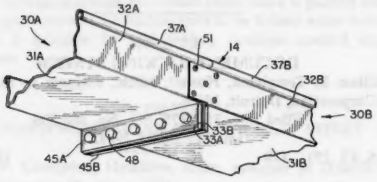
Sunnie Ray, Litchfield, Mich., assignor to Game Time, Inc., Fort Payne, Ala.

Continuation of Ser. No. 932,703, Aug. 11, 1978, Pat. No. 4,211,400. This application May 21, 1980, Ser. No. 152,068
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.³ A63G *21/02*
U.S. Cl. 272—56.5 R **9 Claims**

8. A playground slide, comprising:
a plurality of bedway sections and an exit section each having an upwardly facing bedway floor and laterally spaced

sidewalls each having inwardly facing surfaces and a rounded upper edge;

modularized connecting means for connecting said plurality of bedway sections into an end-to-end relation and said exit section to the lowermost one of said bedway sections along the length of said playground slide, said connecting means each including integral flange means at the opposite longitudinal ends of each of said bedway sections which are identical to each other to facilitate the interchanging of said end-to-end order of said bedway sections, said flange means including at least a pair of flanges defined by an integral, longitudinal extension of said sidewalls beyond the opposite terminal ends of said bedway section, said end-to-end relation comprising the placement of said flanges into side-by-side overlapping relation, the innermost one of said flanges being integral with the uppermost one of said bedway sections along the length of said playground slide and fastening means defining a plurality of axially aligned holes in each of said side-by-side flanges and a plurality of fasteners received in said holes to fasten said flanges together, the portion of said fasteners on the inside of said bedway having a smooth contour along the inside wall of each of said flanges; and



support means for supporting said bedway sections above the ground.

4,270,749

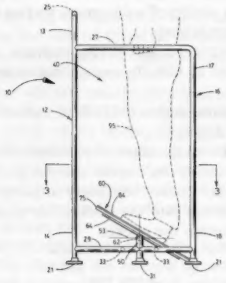
EXERCISING DEVICE

William D. Hebern, 1145 W. Griffith Way, Fresno, Calif. 93705

Filed Jul. 16, 1979, Ser. No. 57,725

Int. Cl.[3] A63B *23/04*

U.S. Cl. 272—96 **1 Claim**



1. An exercising device comprising a substantially parallelipiped frame having a pair of erect forward posts, a pair of erect rearward posts, lower side rails interconnecting the lower end portions of corresponding forward and rearward posts, spacers interconnecting the lower side rails, opposite substantially horizontal, parallel, upper side rails interconnecting the upper end portions of corresponding forward and rearward posts, and a substantially horizontal rear rail interconnecting the upper end portions of the rearward posts, defining a stall having upper and lower ends and a front access opening; a treadle; and means mounting the treadle on the lower side rails for rocking movement in a predetermined path about a substantially horizontal axis disposed substantially transversely of the upper side rails in inwardly spaced relation to the access opening, said treadle being substantially planar and the axis being in downwardly spaced adjacent relation to the treadle, the spacers being located below the treadle and in the path of the treadle to limit the rocking movement thereof.

4,270,750

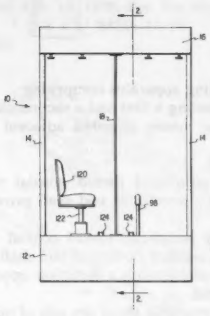
STATIONARY ROPE CLIMB EXERCISE DEVICE

Roger J. Malcolm, 1701 28th Ave., Birmingham, Ala. 35209

Filed Aug. 24, 1978, Ser. No. 936,401

Int. Cl.[3] A63B *21/04*

U.S. Cl. 272—136 **10 Claims**



1. A rope climb exercise device comprising:

a base;

a housing;

column means supporting said housing above said base;

a first winding drum journalled within said housing;

a second winding drum journalled within said base;

a rope connected at one end to said first drum and at its opposite end to said second drum and of such length as to be alternately would on said first and second drums;

tensioning means mounted in said housing and connected to said first winding drum and operative to apply progressively increasing tension to said rope as it is unwound from said upper drum; and

means for rotating said second winding drum to wind said rope thereon.

4,270,751

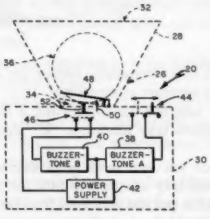
GOLF PUTTING AID APPARATUS FOR THE VISUALLY HANDICAPPED

Stephen D. Lowy, 8 Spruce Rd., Monsey, N.Y. 10952

Filed Sep. 12, 1979, Ser. No. 74,796

Int. Cl.[3] A63B *57/00, 69/36*

U.S. Cl. 273—34 R **11 Claims**



1. A golf putting aid apparatus for a visually handicapped person capable of use with a standard type golf cup, said put-

ting aid comprising a housing insertable in said golf cup, said housing having a golf ball receiving portion and an audible electronic sound emitting portion, said ball receiving portion having an entrance portion alignable in said golf cup for receiving a golf ball putted thereinto, said audible electronic sound emitting portion comprising an audible alarm means capable of providing at least two different independently selectable audibly distinguishable electronic sound emissions, a power supply operatively connected to said electronic alarm means for providing power thereto, bistable switch means having a first open circuit state and a second closed circuit state, said bistable switch means arming said audible alarm means in said second state for providing a first independently selectable audibly distinguishable electronic sound emission for audibly indicating to said visually handicapped person the location of the golf cup in which said housing has been inserted, and spring biased golf ball activated switch means having a first state and a second state for providing a different second independently selectable audibly distinguishable electronic sound emission for audibly indicating to said visually handicapped person that a putt has been successfully completed, said first state being a stable state in which said ball activated switch means is in a resiliently biased normal open circuit condition with no ball in said ball receiving portion, said second state being a state in which said ball activated switch means is in a closed circuit condition with a ball resting in said ball receiving portion, said ball activated switch means comprising a resiliently biased member normally resiliently biased to said open circuit condition by a predetermined resilient bias force, said resilient bias force being selected to be less than the force exerted by a received ball due to the weight of the ball, said resiliently biased member being disposed in said ball receiving portion for enabling pressure contact with a ball received therein for enabling the weight of said received ball to overcome said resilient bias force to place said ball activated switch means into said second state, said ball activated switch means arming said audible alarm means in said second state for providing said second audibly distinguishable electronic sound emission, whereby when said bistable switch is armed said golf cup is initially uniquely audibly located for a subsequent putt whose successful completion is subsequently uniquely audibly indicated when said ball activated switch is armed.

4,270,752

REVERSER APPARATUS FOR TENNIS RACKETS

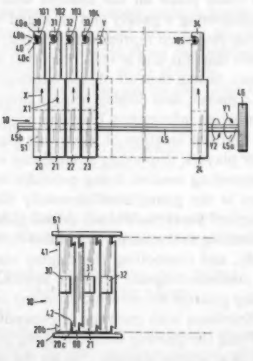
Edgar Strelow, Holsteinischer Kamp 64, 2000 Hamburg 76, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 27,814

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843824

Int. Cl.³ A63B *51/41*

U.S. Cl. 273—73 A **11 Claims**



1. In a device for stringing tennis rackets, said rackets being strung with longitudinally extending strings and cross strings, apparatus for alternately raising and lowering the longitudinal strings strung in a frame of said racket in order to provide spaces therebetween for insertion of said cross string, said apparatus comprising: a plurality of planar support bodies arranged in alignment adjacent each other in interfacing relationship to enable relative movement therebetween in directions extending transversely to said longitudinal strings; string holding devices arranged on each of said support bodies for engaging said longitudinal strings to enable said string to be alternately moved out of a common plane by movement of said support bodies; wall means defining an oblong hole extending through each of said support bodies, with the oblong holes of each of said support bodies being adapted to be placed in general alignment with each other when said plurality of support bodies are arranged in alignment adjacent each other; and actuator means for alternately moving adjacent support bodies in opposed directions in order to alternately separate longitudinal strings engaged in said string holding devices, said actuator means comprising a plurality of discs eccentrically mounted relative to a common axis of rotation, each of said discs being engaged with an oblong hole of one of said support bodies in engaging relationship with said wall means to effect said alternate movement of adjacent support bodies in opposed directions upon rotation of said discs about said common axis.

4,270,753

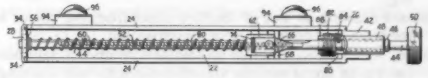
GOLF CLUB SWING INDICATOR

Arthur M. Maroth, and Sybil Maroth, both of 1101 SW. 13th Pl., Boca Raton, Fla. 33432

Filed Nov. 21, 1979, Ser. No. 96,326

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 A **8 Claims**



1. A golf club swing-force indicator comprising, in combination:

(a) an elongate turnable shaft having a lateral abutment spaced inwardly from one of its ends,

(b) a finger piece rigid with the shaft and carried by said one end,

(c) said shaft having a bearing area between the rigid finger piece and the abutment,

(d) a pair of bearings for the shaft,

(e) one of said bearings engaging and supporting said bearing area of the shaft between said finger piece and lateral abutment, and the other bearing engaging and supporting the other end of the shaft,

(f) a torsion spring encircling the shaft at a location inwardly of said one bearing, one end of said spring engaging the abutment on the shaft and the other end of the spring reacting against said one bearing, thereby to bias the shaft for turning in said one bearing,

(g) a weight member having an indicator, slidable along the shaft,

(h) a compression spring on the shaft, engaging the weight member to bias the latter toward one end of the shaft,

(i) said weight member having a pawl and said shaft having a row of teeth cooperable with the pawl to hold the weight member in various adjusted positions against the action of said compression spring,

(j) said shaft having a smooth track on which the pawl can alternately ride when the shaft is turned against the action of said torsion spring, thereby to enable return of the weight to a starting position under the action of said compression spring, and

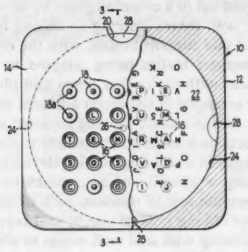
(k) a housing carrying said bearings and enclosing the said shaft, weight and springs.

4,270,754

AMUSEMENT DEVICE

Alex Imatt, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Continuation of Ser. No. 855,352, Nov. 28, 1977, abandoned.
This application May 23, 1979, Ser. No. 41,615
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—273 **10 Claims**



1. An amusement device in the form of a spelling education game comprising:

a base having a playing board with a cylindrical recess on the underside thereof and a plurality of tapered openings on the top arranged in an orthogonal matrix of parallel rows and parallel columns normal to said rows;

a manually removable plug for covering each of said openings, each plug having a tapered base portion shaped to seat within an opening and including handle means to facilitate manual withdrawal and reseating in said opening;

means defining an axis of rotation offset from the center of the rows and columns of said matrix; and

a disc mounted for rotation on said axis relative to said base having an upper surface viewable through said openings when said plugs are withdrawn, said upper surface having a plurality of generally smaller orthogonal matrices thereon comprising indicia arranged in parallel rows and parallel columns normal to said rows, the indicia of each matrix including four characters oriented with one character in each of four orthogonal directions, each of said matrices positioned by said axis to align the indicia thereof below said matrix of openings when said disc is in one of several rotative indexing positions relative to said base and each character appearing alone in an upright orientation when viewed through an opening of said base in one of said indexed positions when the associated plug is removed.

4,270,755

STRATEGY BASED ELECTRONIC COMBAT GAME

Joseph W. Willhide, 17 Crown Ridge Rd., Wellesley, Mass. 02181, and Henry L. Viarengo, Woburn, Mass., assignors to Joseph Willhide, Wellesley, Mass.

Filed Feb. 1, 1979, Ser. No. 8,284
Int. Cl.[3] A63F *9/02*
U.S. Cl. 273—313 **23 Claims**

1. An electronic strategy game comprising:

a console adapted to be passed between players of the game,

a Keyboard on the console having a plurality of keys each for representing a different command,

a display on the console including a plurality of indicators representing a galaxy and arranged in a matrix, one of said indicators representing the players starship and at least one other of said indicators at least at some time representing a planet, and another indicator representing an enemy starship,

less than all of said indicators being illuminated for each player,

said display being a priviledged information display wherein the location of a player's starship is hidden from the other players,

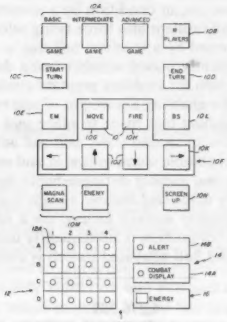
said console having means for selectively initiating each turn,

said display also including means for displaying a remaining energy readout,

each said player having a different display arrangement corresponding to its own starship location,

and control means having communication lines intercoupling with the display and keyboard and including means for receiving command signals from the keyboard for controlling the starship position by movements in any one of a number of different directions with each move expending at least one energy unit, and means for receiving command signals to fire the starships weapons along different courses, each hit on an enemy starship costing the enemy player at least one energy unit and each firing costing the player at least one energy unit,

said control means also including means for controlling the display indicators to simultaneously represent said player's starship and planet in a visually distinguishable manner, and means for controlling the display indicators to simultaneously represent the planet and enemy starship in a visually indistinguishable manner.

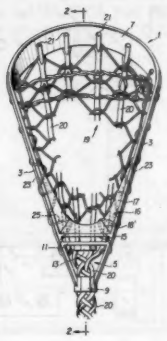


23. An electronic strategy game and corresponding method of play comprising the steps of; providing a console adapted to be passed between players of the game, providing a keyboard on the console having a plurality of keys, each for representing a different command including move and fire commands, displaying at some place on the console with a plurality of indicators representing a galaxy and arranged in a matrix, the indicators being displayed representing the player's starship, at least one enemy starship, and at least one other indicator representing a planet, or less than all of said indicators being illuminated for each player, said display being a privileged information display wherein information blanking occurs at the end of each turn so that the location of a player's starship is hidden from the other players, displaying a remaining energy readout, with a corresponding readout being provided in turn for each of the players in the game, simultaneously illuminating said enemy starship and planet indicators indistinguishably, simultaneously illuminating said starship and planet indicators visually distinguishably, and controlling the display via the keyboard by receiving command signals from the keyboard for controlling the starship position by movements in any one of a number of different directions with each move expending at least one energy unit, firing the starship weapons along different courses with each hit of an enemy starship costing the enemy player at least one energy unit and each firing expending at least one energy unit of the present player.

4,270,756
LACROSSE STICK HEAD

Carl B. Ahlenfeld, 6010 Westchester Park Dr., College Park, Md. 20740, and James D. Macey, 3483 Olympia Rd., Davidsonville, Md. 21035

Filed Apr. 6, 1979, Ser. No. 27,981
Int. Cl.³ A63B *65/12*
U.S. Cl. 273—326 **6 Claims**



1. A lacrosse stick head comprising:
(a) a frame including a pair of sidewalls joined at their lower ends forming a throat, and said sidewalls diverging in a generally V-shaped manner;
(b) means for receiving a handle in said throat;
(c) a top portion joining the top of said sidewalls;
(d) a cross member extending between said sidewalls in the throat;
(e) a resilient generally U-shaped cushion having legs and a bight positioned in the head, the legs of the U-shaped cushion extending upwardly along said sidewalls and said bight extending along said cross member;
(f) a plurality of substantially coextensive holes in said cushion and in said frame; and
(g) webbing supported on said frame and extending through said holes in said bight and cross member.

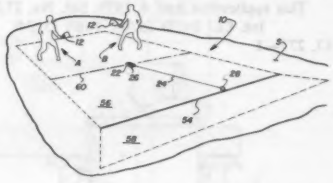
2. A lacrosse stick head comprising:
(a) a frame including a pair of sidewalls joined at their lower ends forming a throat, and said sidewalls diverging in a generally V-shaped manner;
(b) means for receiving a handle in said throat;
(c) a top portion joining the top of said sidewalls;
(d) a cross member extending between said sidewalls in the throat;
(e) a resilient generally U-shaped cushion having legs and a bight positioned in the head, the legs of the U-shaped cushion extending upwardly along said sidewalls and said bight extending along said cross member;
(f) a plurality of substantially coextensive holes in said cushion and in said frame; and
(g) webbing supported on said frame and extending through said holes in said legs and sidewalls.

4,270,757
TETHERED BALL GAME AND APPARATUS

Samuel B. Ligon, Dallas, Tex., assignor to Jokari/U.S., Inc., Dallas, Tex.

Filed Apr. 2, 1979, Ser. No. 26,284
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—411 **12 Claims**

1. Game apparatus for playing simulated racquetball on an open playing surface by one or more players using racquets, which comprises:
line means positioned on the playing surface for defining a bounce zone and a playing zone separated by a substantially straight boundary line of predetermined length, said boundary line means having a midpoint;
said boundary line means separating the playing zone in which the players move during the game, and the bounce zone on the playing surface;
a base positioned on the playing surface in predetermined spaced apart relationship in a direction substantially normal to the midpoint of said boundary line means, said base being located within the playing zone;
an elastic tether cord of predetermined length in relaxed condition substantially equal to the distance between said base and boundary line means, said tether cord having two ends;
swivel means for rotatably connecting one end of said tether cord to said base;
a resilient ball having a hollow interior and a radial aperture extending between substantially spherical inside and outside surfaces;

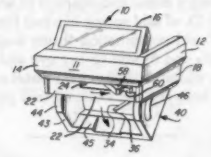


an inelastic loop positioned in the aperture of said ball and having inside and outside ends, the outside end of said loop being connected to the other end of said tether cord; and
plug means secured to the inside end of said loop within said ball for preventing separation of said loop from said ball;
said ball having bounce characteristics similar to a standard racquetball and being suitable for repeated bouncing and hitting by racquets held by the players;
said ball, tether cord and boundary line means cooperating such that said ball, when struck with a racquet and hit over said boundary line means, bounces in the bounce zone and is returned by said tether cord and caused to bounce in the playing zone in a manner simulating that in which a free racquetball rebounds from the walls of a conventional enclosed racquetball court.

4,270,758
LEVER OPERATED STYLUS GUARD FOR PHONOGRAPH PICK-UP CARTRIDGE

Joseph D. Kehl, Chicago, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.

Filed Dec. 5, 1979, Ser. No. 100,420
Int. Cl.³ G11B *21/00, 3/10*
U.S. Cl. 369—170 **10 Claims**



1. A stylus holder and guard for use with sound recordings comprising
a main body member,
a movable stylus guard member mounted on a main body member for pivotal movement in a first plane,
a stylus,

a stylus grip member to retain the stylus in a position to engage with a recording, also attached to said main body member,

a manually rotatable lever member secured to the main body member for pivotal movement in a second plane perpendicular to the first plane, and

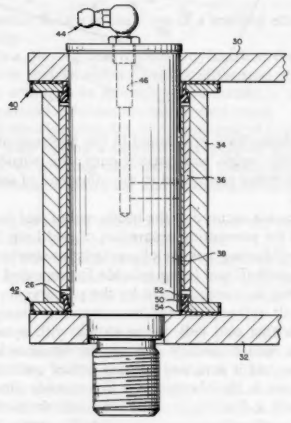
means on said rotatable lever member and said movable stylus guard member to cause movement of the guard member to one position wherein the stylus cannot contact the recording and into another postion wherein the stylus is in a position to be able to contact the recording.

4,270,759

COMBINATION THRUST WASHER AND SEAL ARTICLE, APPARATUS AND METHOD

Dennis N. Denton, Gaston County, and Martin E. Benjamin, Gastonia, both of N.C., assignors to Garlock Inc., Longview, Tex.

Division of Ser. No. 768,070, Feb. 14, 1977, Pat. No. 4,175,756.
This application Apr. 4, 1979, Ser. No. 27,004
Int. Cl.[3] B62D *55/08;* F16S *15/24*
U.S. Cl. 277—1 **8 Claims**



1. A method for preventing contaminants from entering the bushing-pin area of a spring shackle bracket assembly including a pair of spaced-apart brackets, a spring eye positioned between said brackets, a bushing inside of said spring eye, and a pin extending between said brackets and inside of said bushing, said method comprising the steps of: bonding an annular elastomeric seal body to an annular ring-shaped metal thrust washer adapted for use in said assembly to provide a combination thrust washer and seal article, providing said seal body with a sealing lip having a proximal end adjacent the I.D. of the washer and extending axially therefrom away from said washer and having a distal end adapted to sealingly contact at least one of the I.D. of said spring eye and the O.D. of said pin, installing one of said combination thrust washer and seal articles between each end of said spring eye and the adjacent one of said brackets, and press-fitting said distal end of said sealing lip in the space between the O.D. of said pin and the I.D. of said spring eye.

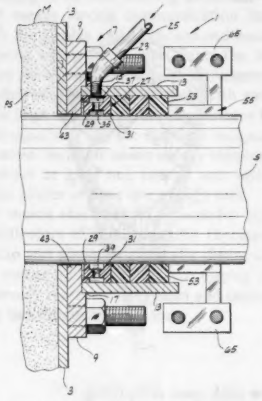
4,270,760

SEALING ASSEMBLY

Myrl H. W. Greiman, 5100 Wise Ave., St. Louis, Mo. 63110

Filed Oct. 15, 1979, Ser. No. 84,835
Int. Cl.[3] F16J *15/26, 15/40*
U.S. Cl. 277—3 **41 Claims**

1. An assembly for sealing clearance space around a shaft between the shaft and a surrounding member comprising a housing adapted to be mounted adjacent said clearance space in fixed position relative to the shaft, the latter extending through the housing, a relatively rigid sealing ring mounted in the housing around the shaft and having a clearance fit therewith, means for securing the ring in fixed position relative to the housing, an annular recess opening radially inwardly



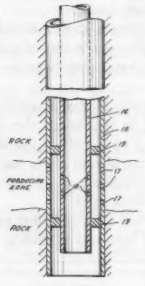
around the shaft at the side of the ring toward said clearance space, passaging in the ring communicating with said recess, and an inlet in the housing for delivery of gas under pressure via said passaging to said recess, the gas flowing along the shaft and into said clearance space for inhibiting escape through the clearance space of material tending to move therethrough in a direction opposite to said gas flow.

4,270,761

SEAL FOR GEOTHERMAL WELLS AND THE LIKE

Daniel L. Hertz, Jr., Red Bank, N.J., assignor to Seals Eastern Inc., Red Bank, N.J.

Filed Dec. 3, 1979, Ser. No. 99,278
Int. Cl.[3] E21B *33/124;* F16J *15/12*
U.S. Cl. 277—12 **6 Claims**



1. A seal for use in a high temperature environment, such as a geothermal well, the seal including a ring-shaped element of a polymer which is substantially crystalline at room temperature and has a molecular weight of at least about 400,000, the polymer having a crystalline melting temperature above 500° F. and a melting point above 650° F., and the polymer being characterized by molecular chain entanglements to the extent of an average of at least about ten physical entanglements per chain when the polymer is in an amorphous state, the element expanding in response to being heated, by the contents of a

well, to a temperature between the crystalline melting temperature and the melting pont of the polymer.

4,270,762

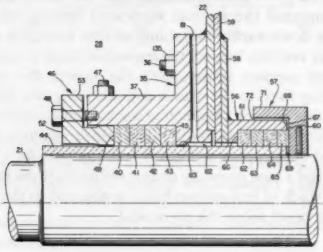
DISPERSER SEAL AND METHOD

Robert T. Johnston, Dearborn Heights, Mich., assignor to Coaltek Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 793,450, May 3, 1977, abandoned. This application Jul. 25, 1978, Ser. No. 927,766

Int. Cl.³ F16J *15/40, 15/26*

U.S. Cl. 277—59 **16 Claims**



1. A seal for a shaft of a disperser crusher adapted to pulverize hot coal particles that are conveyed by hot gases to the crusher, said crusher being in a casing having a wall through which the shaft extends to a drive motor, said seal adapted to maintain a higher than atmospheric pressure established by the hot gases within the casing, comprising interior and exterior packings enclosed within interior and exterior packing housings fixed on and respectively inside and outside of said casing wall and each packing in abutting relationship with a high temperature resistant low friction coefficient sleeve on said shaft, means for urging each of the packings against said sleeve on said shaft to establish a seal between said sleeve and the casing wall, said packings being fabricated of a material capable of withstanding the elevated temperatures on the surface of the shaft, conduit means for supplying gas to the interior packing in a direction to urge the interior packing longitudinally of the shaft away from the casing wall, said conduit means in fluid flow relationship with means for establishing a tortuous path for the coal particles from the interior of the casing to the interior packing, wherein the tortuous path terminates in a generally annular nozzle for the gas, said nozzle directing the gas back over the interior packing housing toward a casing wall portion adjacent the seal, said gas being inert with the coal particles and having a pressure greater than the pressure inside of the casing whereby coal particles are continuously biased away from the packings by the gas emitted from the nozzle.

4,270,763

SPLIT-JAW LATHE CHUCK WITH LOCKABLE INNER JAW PARTS

Günter H. Röhm, Hinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,272

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821851

Int. Cl.³ B23B *5/22, 31/16*

U.S. Cl. 279—123 **10 Claims**

1. A lathe chuck comprising:

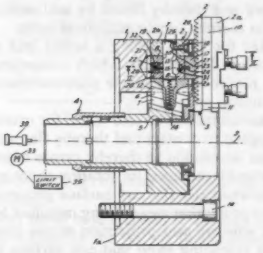
a chuck body rotatable about an axis and formed with a plurality of angularly spaced and radially extending inner guides and with a plurality of angularly spaced and radially extending outer guides, each of said inner guides in turn having a respective axially forwardly directed and radially extending blocking surface and a respective axially forwardly opening recess at the respective blocking surface;

respective inner jaw parts radially displaceable in said chuck body in said inner guides;

means including at least one operating element engageable with said inner jaw parts for radially displacing same in said chuck body in the respective inner guides between radially inner and radially outer positions;

respective outer jaw parts projecting axially from said chuck body and radially displaceable therein in said outer guides;

respective coupling members between said inner jaw parts and the respective outer jaw parts and each engageable only in a predetermined radial position of the respective



inner jaw part in the respective recess, said members when not engaged in the respective recesses riding on the respective blocking surfaces and being in a coupling position engaging both of the respective parts and coupling same together for joint radial displacement and being axially displaceable only when aligned axially with the respective recesses from said coupling position into a decoupling position engaged at least partially in the respective recesses for relative displacement of the respective jaw parts; and

means for displacing said members between the coupling and decoupling positions only when said members are aligned with the respective recesses in said predetermined radial positions of the respective inner jaw parts.

4,270,764

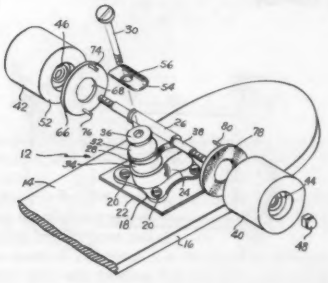
NOISEMAKER FOR SKATEBOARD

Carl S. Yamada, 1415 Victoria St., Apt. 308, Honolulu, Hi. 96822

Filed Nov. 3, 1978, Ser. No. 957,362

Int. Cl.³ A63C *17/02*

U.S. Cl. 280—87.04 A **7 Claims**



3. A noisemaker for a toy having a wheel and means for supporting said wheel for rotation, which comprises:

plate means connected to said supporting means; and

projection means connected to said wheel for rotating therewith and adapted to contact and thereby flex said plate means at least once per revolution to thereby create noise, wherein said plate means comprises a thin, substantially planar metallic plate positioned substantially parallel to the axis of rotation of said wheel, forward and rear substantially parallel edges, and a substantially linear side edge connecting said forward and rear edges and being substantially perpendicular to said axis, said side edge positioned so as to be intercepted and thereby flexed by said projection means, and

wherein said toy includes a second wheel rotating about said axis and having second projection means connected thereto, said plate including a second side edge substantially parallel to the other side edge and positioned so as to be intercepted and thereby flexed by said second projection means to thereby create additional noise.

4. A noisemaker for a toy having a wheel and means for supporting said wheel for rotation, which comprises:

a substantially planar flexible single plate connected to said supporting means; and

projection means connected to said wheel for rotating therewith and adapted to contact and thereby flex said plate at least once per revolution to thereby create noise,

wherein said wheel is mounted for rotation about an axle and includes a substantially flat end surface perpendicular to said axle, said projection means being mounted to said end surface, and wherein said projection means comprises at least one pin extending from said end surface a distance just sufficient to intercept and thereby flex the edge of said plate upon rotation of said wheel;

wherein said projection means further comprises a substantially flat base member fastened to said end surface of said wheel and including a central aperture through which said axle extends, said at least one pin extending from the outer surface of said flat base member; and

wherein said base member further includes a plurality of pins extending from said outer surface, each of which is adapted to intercept said single plate once per revolution of said wheel,

wherein said toy includes a second wheel mounted for rotation about said axle and being substantially identical to the outer wheel, a second projection means being connected to the end surface of said second wheel so as to intercept said plate at least one time per revolution of said second wheel.

4,270,765

CHASSIS-CAB AUTOMOTIVE VEHICLE WITH A DOUBLE REAR AXLE

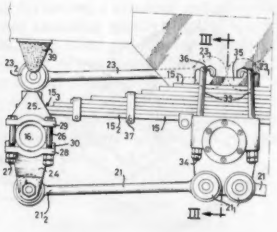
Paul Legueu, 85 av. de Mazy, 44380 Pornichet, France

Filed Sep. 7, 1979, Ser. No. 73,388

Claims priority, application France, Mar. 26, 1979, 79 07511

Int. Cl.³ B60P *9/00*

U.S. Cl. 280—137 **13 Claims**



1. In an automotive vehicle comprising a single unit chassis supported in the front by an axle and associated wheels and in the rear by two longitudinally spaced axles and associated wheels, a stack of leaf-springs coupled to and extending between both rear axles on one side of the vehicle and another stack of leaf-springs coupled to and extending between both rear axles on the other side of the vehicle, each stack of leaf-springs being carried in its transverse median plane by an equalizer mechanism pivotally mounted on an end of a pivot shaft, the pivot shaft being fixed against rotation and rigid with an equalizer support fixed to the chassis of the vehicle, the two rear axles being located on each side of and at equal distances from the pivot shaft and being movably connected to the equalizer mechanism by at least one upper and at least one lower reaction link for each stack, the improvement comprising for each stack of leaf-springs a sleeve fixed to the chassis, an end of the pivot shaft extending into the sleeve and being rigidly connected thereto and supported therein, the sleeve including a downwardly extending portion to which one end of the lower reaction link for the respective stack is connected, an equalizer support surmounting the sleeve, the equalizer support being fixed to the chassis and receiving one end of the upper reaction link for a respective stack, an additional support non-rotatably connected to each rear axle to which is coupled the free end of the upper and lower reaction links for a respective stack, and a base pivotally connected to the pivot shaft, the respective stack of leaf-springs being connected to the respective base to pivot about the pivot shaft.

4,270,766

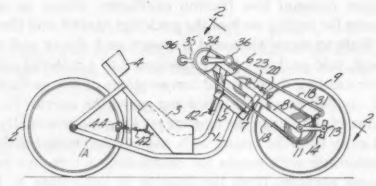
ARM AND LEG POWERED DRIVE SYSTEM FOR A VEHICLE

John C. Thomas, 1557 McKinley St., Eugene, Oreg. 97402

Filed Aug. 10, 1979, Ser. No. 65,458

Int. Cl.³ B62M *1/12*

U.S. Cl. 280—234 **10 Claims**



1. A drive system for a vehicle enabling use of an operator's arms and legs to provide a source of motive power, jointly or individually, to a powered vehicle wheel, said system comprising,

a live axle and sprocket combination adapted for rotation by the operator's legs,

a hub and wheel rotatably journaled on said axle,

a hand crankshaft adapted for rotation by the operator's arms,

a torque tube assembly including a torque tube concentric with said hand crankshaft and having driving and driven sprockets thereon, unidirectional clutch means interposed between said torque tube and said hand crankshaft and having clutch components engageable during rotation of said hand crankshaft in one direction and thereby operable to impart powered rotation to the torque tube while permitting an overrunning of clutch components in an opposite direction of rotation,

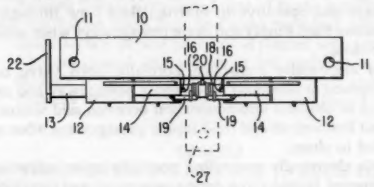
means directly coupling the live axle and sprocket combination to the torque tube driving sprocket, and

power transmission means interconnecting a torque tube driven sprocket and said axle journaled hub to impart rotation to same.

4,270,767
DEVICE FOR CONTROLLING SWINGING DRAWBAR OF FARM TRACTOR

L. Louis Schilling, Box 28, Little Rock, Iowa 51243

Filed Oct. 1, 1979, Ser. No. 80,427
Int. Cl.³ B60D 1/00
U.S. Cl. 280—477 5 Claims

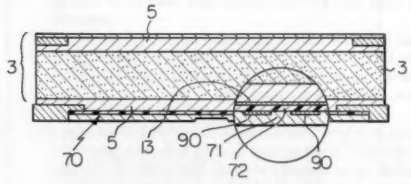


1. A drawbar controlling device to be used in connection with a tractor having a drawbar, said drawbar being laterally swingable but having a normal, longitudinally aligned, pulling position; comprising a cross member adapted to be fastened to said tractor adjacent said drawbar, shaft means including a shaft rotatably mounted on said cross member, tab means individually rotatably mounted on said shaft, said tab means including tabs adapted to embrace said drawbar to constrain it from swinging away from its longitudinally aligned position, means on said tabs and on said shaft engageable to provide a normal position for said tabs on said shaft, means engaged between said tab means and said shaft to bias said tabs to their normal position, and means controlling said shaft means whereby the shaft may be rotated to carry said tabs away from the position in which they embrace said drawbar.

4,270,768
SKI AND A PROCESS FOR MANUFACTURING SAME

Tatsuo Nakanishi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jul. 26, 1978, Ser. No. 928,380
Claims priority, application Japan, Aug. 1, 1977, 52/91376; Aug. 16, 1977, 52/97970
Int. Cl.³ A63C 5/12
U.S. Cl. 280—610 8 Claims

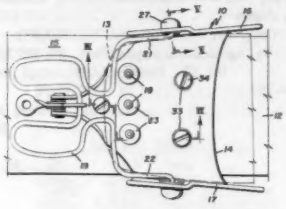


1. An improved ski comprising
a main body;
a sole board bonded to the bottom of said main body; and
at least a pattern provided within said sole board;
said sole board being made up of a transparent polyethylene sheet defining the bottom surface of said ski, and a thermoplastic synthetic resin composite sheet sandwiched between said main body and said polyethylene resin sheet; said composite sheet contains polyethylene resin, ethylene-vinyl acetate copolymer resin and filler;
said pattern is formed on the mating surface of said composite sheet with said polyethylene sheet.

4,270,769
SKI BINDING

Henry P. Berlied, Jr., Main Street, West Concord, Mass. 01781

Division of Ser. No. 844,784, Oct. 25, 1977, Pat. No. 4,145,070.
This application Feb. 9, 1979, Ser. No. 10,708
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.³ A63C 9/20
U.S. Cl. 280—615 2 Claims

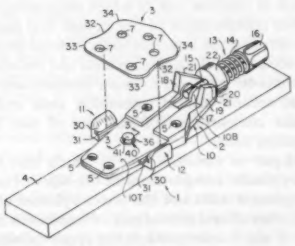


1. Cross-country ski binding for fixing the toe of a boot to a ski, comprising:
(a) a sheet metal base adapted to be fixed to the upper horizontal surface of the ski, the plate having integral flanges extending vertically on either side for engaging the sides of the boot,
(b) a plurality of hollow pins extending upwardly from the plate for engaging suitable apertures in the boot, each pin being integrally formed from the plate, and
(c) a plurality of upwardly-directed bosses, one for each pin, each boss being integrally formed with its respective pin and extending from the base plate, each boss having a flat upper surface below its respective pin and extending outwardly a substantial distance from the pin.

4,270,770
STEP-IN SKI BINDING

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Filed Dec. 7, 1978, Ser. No. 967,226
Int. Cl.³ A63C 9/08
U.S. Cl. 280—624 19 Claims



1. A step-in ski binding for securing a ski boot to a ski rearward of the toe and forward of the rear of the heel of the ski boot comprising:
an engaging member having an opened condition for disengaging the ski boot and the ski and a closed condition for engaging the ski boot and the ski;
a step-in member changeable in response to an entry of said ski boot into said binding betwen first, second and third separate and distinct conditions, said first and said third conditions corresponding to said closed condition of said engaging member and said second condition corresponding to said open condition of said engaging member; and
means coupling said step-in member and said engaging mem-

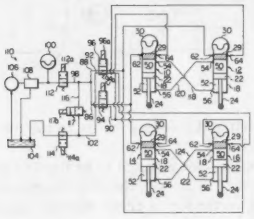
ber for changing said engaging member from said closed condition to said open condition when said step-in member is changed from its first to its second condition, and for changing said engaging member from said open condition to said closed condition when said step-in member is changed from said second to said third condition.

4,270,771

HYDROPNEUMATIC SUSPENSION SYSTEM

Masayuki Fujii, No. 3-5, Kami-ohoka-nishi, Konan-ku, Yokohama City, Japan

Filed Nov. 24, 1978, Ser. No. 963,471
Claims priority, application Japan, Nov. 25, 1977, 52-140596
Int. Cl.[3] B60G *11/28*
U.S. Cl. 280—707 **5 Claims**



1. A hydropneumatic suspension system for a wheeled vehicle comprising:

a source of hydraulic fluid under pressure;

a hydraulic fluid reservoir;

first and second pairs of hydropneumatic suspension units disposed between a body and wheel supporting means of the vehicle, each of said suspension units including a cylinder body having a cylinder chamber, a piston slidably accommodated in the cylinder chamber and dividing the cylinder chamber into upper and lower cylinder compartments and self-levelling valve means operative to alternatively communicate said source and said reservoir to said upper cylinder compartment through inlet and outlet ports of the suspension units for thereby maintaining the level of the vehicle body above the ground substantially constant;

a first pair of conduits, one of which interconnects the upper cylinder compartment of one of said first pair of suspension units and the lower cylinder compartment of one of said second pair of suspension units and the other of which interconnects the upper cylinder compartment of said one of said second pair of suspension units and the lower cylinder compartment of said one of said first pair of suspension units;

a second pair of conduits, one of which interconnects the upper cylinder compartment of the other of said first pair of suspension units and the lower cylinder compartment of the other of said second pair of suspension units and the other of which interconnects the upper cylinder compartment of said other of said second pair of suspension units and the lower cylinder compartment of said other of said first pair of suspension units;

a first fluid supply passageway communicating with the inlet ports of said first pair of suspension units;

a second fluid supply passageway communicating with the inlet ports of said second pair of suspension units;

a third fluid supply passageway hydraulically connecting said first and second fluid supply passageways to said source;

a first drain passageway communicating with the outlet ports of said first pair of suspension units;

a second drain passageway communicating with the outlet ports of said second pair of suspension units;

a third drain passageway hydraulically connecting said first and second drain passageways to said reservoir;

first electrically controlled normally open valve means disposed in said first fluid supply and drain passageways and operative to obstruct fluid flow through said first fluid supply and drain passageways when actuated to close;

second electrically controlled normally open valve means disposed in said second fluid supply and drain passageways and operative to obstruct fluid flow through said second fluid supply and drain passageways when actuated to close;

third electrically controlled normally open valve means disposed in said third fluid supply passageway and operative to obstruct communication between said source and said first and second fluid supply passageways when actuated to close;

fourth electrically controlled normally open valve means disposed in said third drain passageway and operative to obstruct communication between said reservoir and said first and second drain passageway when actuated to close;

a shunt passageway interconnecting said third fluid supply passageway and said third drain passageway in such a manner that the junction between said shunt passageway and said third fluid supply is located upstream of said third valve means and that the junction between said shunt passageway and said third drain passageway is located downstream of said fourth valve means;

electrically controlled normally closed valve means disposed in said shunt passageway and operative to allow fluid flow through said shunt passageway when actuated to open; and

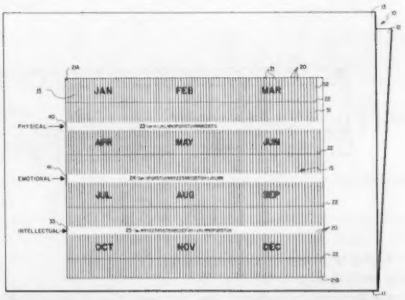
in which said electrically controlled valve means are actuated such that hydraulic fluid under pressure is supplied to the upper cylinder compartments of the first and second pairs of suspension units through the outlet ports thereof from said source and thereafter hydraulic fluid in the upper cylinder compartments of one of the first and second pairs of suspension units is supplied to the lower cylinder compartments of the other pair.

4,270,772

ADJUSTABLE BIORHYTHM DISPLAY ASSEMBLY

Errol G. Bodily, 9789 Sandridge Dr., Sandy, Utah 84070

Filed Jul. 26, 1979, Ser. No. 60,983
Int. Cl.[3] B42D *15/00*; G06C *3/00*
U.S. Cl. 283—1 A **8 Claims**



1. An adjustable biorhythm display assembly, comprising:

a graphing background presenting a neutral reference line in association with indicia spaced along said reference line at abscissa locations in correspondence to the days within an interval of time;

a set of transparent overlays, each imprinted with a visible sine wave with a selected periodicity corresponding to a number of said indicia equal to the number of days included within a significant human biorhythm cycle posi-

tionable over said background format so that each period of each said sine wave begins and ends on said neutral reference line;

means for holding said set of overlays in association with said background format so that all of said sine waves are visible against said reference line with each intersecting said reference line from negative to positive at abscissa locations selected an integral number of its periods counted from a preselected date of birth; including

a cover folded into a front leaf and a back leaf, wherein the inside surface of said back leaf is printed with said graphing background and said front leaf includes a window through which said graphing background is visible, said overlays being positionable between said leaves.

4,270,773

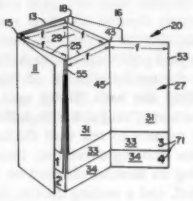
PERMANENTLY FOLDED MAP IN BOOK FORM

Ralph R. Gaetano, Bethel Park, Pa., assignor to Think, Inc., Morgantown, W. Va.

Filed Dec. 7, 1978, Ser. No. 967,517

Int. Cl.³ G09B *29/04*

U.S. Cl. 283—34 **33 Claims**



1. A permanently mounted map in book form which comprises:

A. a unitary cover, having a longitudinal hinge between a front cover and a back cover, an upper edge, a lower edge, and a length therebetween; and

B. said map in permanently folded form, having:

(1) a bottom edge and a top edge,

(2) at least four lateral folds, comprising:

(a) an inwardly folded first lateral fold which is spaced from said bottom edge of said map by a distance that is less than said length of said cover to define a bottom strip extending across the entire width of said map,

(b) an outwardly folded second lateral fold which is spaced from said first lateral fold by less than said distance,

(c) an inwardly folded third lateral fold which is juxtaposed to said first lateral fold to form a lateral pleat, having said second lateral fold equidistant between said first and third lateral folds, that extends across the entire width of said map,

(d) an inwardly folded final lateral fold which is spaced from said top edge of said map to form a lateral flap and which defines at least one lateral strip, between said third and final lateral folds, that extends across the entire width of said map, whereby at least three offset strips are available for indexing, and

(3) at least seven longitudinal folds which are alternately folded inwardly and outwardly to form at least three double leaves and a pair of single leaves in flanking relationship to said double leaves,

(4) slits, in alternate longitudinal folds, from said first lateral fold to said third lateral fold and from said final lateral fold to said top edge, whereby said lateral flap and said lateral pleat are slit along the outer edges of said double leaves, and

(5) attachment of said lateral strip and said bottom strip within said single leaves to the inside of said front cover and to the inside of said back cover, while said first and third lateral folds are juxtaposed, so that said final lateral fold is approximately adjacent to said upper edge of said cover.

4,270,774

METHOD OF MAKING BINGO OR TOMBOLA TICKETS AND ARTICLE PRODUCED THEREBY

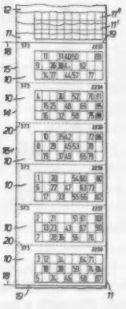
Gerald W. Barnes, Ipswich, England, assignor to W. S. Coswell Limited, Ipswich, England

Filed Mar. 29, 1979, Ser. No. 25,003

Claims priority, application United Kingdom, Apr. 8, 1978, 13869/78

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—62 **15 Claims**



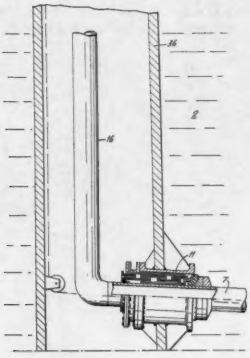
1. A method of making a set of bingo tickets in final, completed form, ready for point of purchase retailing, each ticket having a combination of playing numbers thereon which is different from the combination on the other tickets of the set, each combination being a unique selection of playing numbers from a predetermined plurality of playing numbers callable in a game, comprising grouping the combinations for printing successively such that each group, consisting of a plurality of combinations, contains all the playing numbers callable in a game, printing the combinations on at least one side of a single web strip to form a set consisting of a single strip of printed tickets all connected one to another, and then folding the web strip transversely at spaced intervals along its length to form said strip into a fan-folded configuration, the folds occurring between selected adjacent tickets whereby between each adjacent pair of folds is a plurality of tickets forming an integral number of ticket groups, there being at least one such group, and at view in the tickets in said at least one group are all the numbers which may be called during a game, each number appearing once only in said ticket group.

8. A set of bingo tickets in final, completed form, ready for point of purchase retailing, consisting of a single web strip of tickets, each ticket being printed with a combination of playing numbers, the number combination of each ticket being different from the number combinations of all the other tickets in the set, wherein said combinations are printed on at least one side of said single web strip, said tickets are arranged in successive groups, each group comprising a plurality of tickets and all the playing numbers callable in a game appear once only in said each group, and wherein said single web strip is folded transversely at regular intervals along its length into a fan folded configuration, there being an integral number of groups lying between each adjacent fold, there being at least one such group between each said adjacent fold.

4,270,775
DEVICE FOR SEALING THE PLACE OF PENETRATION OF A PIPELINE IN THE WALL OF A SUBMERGED STRUCTURE

Nick Noensie, Lexington, Ky.; John N. Stanfield, Oslo, and Paal Pettersen, Bergen, both of Norway, assignors to A/S Akers Mek. Versted, Oslo, Norway

Division of Ser. No. 941,731, Sep. 12, 1978. This application May 10, 1979, Ser. No. 37,662
Claims priority, application Norway, Sep. 21, 1977, 773240; Feb. 24, 1978, 780649
Int. Cl.[3] F16L *35/00*
U.S. Cl. 285—24 12 Claims



1. A connecting system for sealing the penetration point at which a pipeline passes through a hole in a wall of a structure located beneath the surface of a body of water, said hole including a penetration sleeve sealingly passing therethrough, and the pipeline having a fixed annular ring positioned thereabout near the hole in the wall, said system including:

a hollow outer cylindrical connection sleeve which is extendable through the hole in said wall of said structure and within said penetration sleeve, one end of said outer connection sleeve including an outwardly extending flange means sealingly connected to said penetration sleeve and the other end including an inwardly extending flange means,

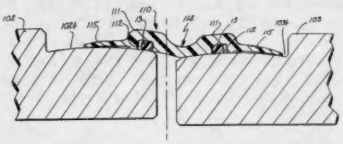
a hollow inner cylindrical sleeve positioned within said outer cylindrical sleeve, said inner cylindrical sleeve being connected to said inwardly extending flange means of said outer cylindrical connection sleeve, and

an axially flexible sealing device connected to said inwardly extending flange means of said outer cylindrical sleeve and positioned to extend inbetween said outer cylindrical sleeve and said inner cylindrical sleeve, said sealing device comprising at least one annular member, each annular member including an axially extending inner cylindrical member, at least one outer cylindrical member and a flexible ring member connecting each said outer cylindrical member to said inner cylindrical member, each said outer cylindrical member being positioned about said inner cylindrical member such that with each said flexible ring member in an untensioned state, each said outer cylindrical member will be separated from one another and will have a portion which extends in an axial direction beyond the adjacent end of said inner cylindrical member, the outer cylindrical member of said annular member located farthest from said inwardly extending flange means of said outer cylindrical sleeve including an inwardly extending stop means for sealing abutment with said fixed annular ring of said pipeline.

4,270,776
FLEXIBLE PIPE JOINT FOR NON-INTERENGAGING PIPE SECTIONS

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Filed May 17, 1979, Ser. No. 39,846
Int. Cl.[3] F16L *21/00*
U.S. Cl. 285—235 5 Claims

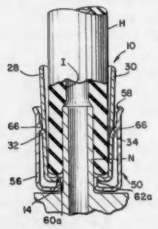


1. A flexible pipe joint comprising: first and second non-interengaging pipe sections and a cylindrical collar extending between and joining the ends of said pipe sections; said collar including an annular pipe engaging portion at each end thereof, each engaging an end of one of said pipe sections, and a mid-section between said pipe engaging portions which is relatively more flexible than said pipe engaging portions and which is sufficiently flexible to allow some misalignment of said pipe sections relative to one another, yet which is sufficiently rigid that said pipe sections do not readily shift relative to one another during installation of one pipe section into another and during the back filling operation; each annular pipe engaging portion of said collar including a shoulder which is enlarged with respect to the wall thickness of said flexible collar mid-section and rigid relative thereto; each enlarged shoulder including an annular channel on the inside, pipe-facing surface thereof, and a sealing means seated in said channel for sealing the juncture between said collar and the respective pipe end; each shoulder further including an annular, pipe-engaging skirt extending outwardly therefrom in a direction away from said collar mid-section; and each skirt being flexibly resilient, and biasing radially inwardly, without the aid of external force to frictionally abut against the outer surface of the respective pipe section end thereby retaining said pipe section ends within said collar.

4,270,777
RELEASABLE HOSE FITTING

Charles K. Fisher, Belford, N.J., assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 9, 1978, Ser. No. 959,289
Int. Cl.[3] F16L *33/22*
U.S. Cl. 285—242 14 Claims



1. A fitting for releasably securing a flexible hose defining an internal channel to a hose-receiving nipple dimensioned to fit within the channel, said fitting comprising:

A. a male fitting member for mounting to an end of the hose and including

i. an end portion defining an opening therethrough for mounting adjacent the end of the hose, said opening being adapted to expose the hose channel,

ii. means for gripping the hose and for retaining said male fitting member on the hose, and

iii. a pair of relatively resilient, inwardly deflectible wings projecting from said end portion for extending along the sides of the hose, each of said wings including outwardly projecting locking means; and

B. a female fitting member formed as a unitary component from a resilient material for mounting to the hose-receiving nipple and including

i. a base portion defining an opening therethrough for receiving the nipple,

ii. means for retaining the female fitting member on the nipple, and

iii. a wall portion projecting from said base portion for surrounding the nipple, said wall portion defining an entrance opening opposite said base portion;

whereby when said male fitting member is inserted within said female fitting member, the nipple is received within the hose channel and said locking means resiliently grip said wall portion to secure the hose on the nipple, and whereby said male fitting member is releasable from said female fitting member by deflecting said wings inwardly toward the hose to disengage said locking means from said wall portion.

4,270,778

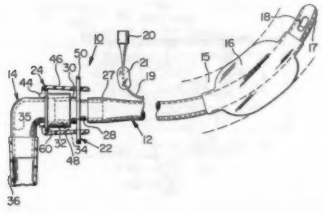
TUBE CONNECTOR WITH SECURITY MEANS

Richard G. Brownell, Greenwich, N.Y., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed May 3, 1979, Ser. No. 35,864

Int. Cl.³ F16L *37/12*

U.S. Cl. 285—305 **3 Claims**



1. Medical fluid connection means for releasably connecting a tracheal tube adapted to be intubated in a patient to a fluid coupling adapter of gas supply equipment having slip-fit connection means comprising a single-piece connector having a bore therethrough and with the distal end thereof connectible with the proximal end of a tracheal tube to connect the tube in fluid communication with said bore, said connector having an integral slip-fit coupler at the proximal end thereof connectible with the slip-fit connection means for connecting the adapter in fluid communication with said bore and the tracheal tube, and radially extending flange means having a pair of diametrically disposed slots extending inwardly from the radially outer periphery thereof, each of said slots having a radially outer entrance portion of less width than an inner portion thereof, and an elastic security member having diametrically opposed free ends and an integral intermediate portion between said opposed free ends, said intermediate portion being capable in use of extending at least partially around a part of an adapter, said intermediate portion including a closed loop portion forming an opening adapted to encircle a portion of an adapter, and a pair of arms integral with and extending diametrically in opposite directions from said loop portion and integrally connected respectively to said free ends, each of said arms having a portion thereof movable into one of said slots and having a width greater than the width of said entrance portion of the slot, each of said free ends having a width greater than the width of said inner portion of each of said slots and the width of said portions of said arms and engageable with said flange means on the distal side thereof to hold the ends of the elastic member in place whereby said elastic member resiliently resists the fluid coupling adapter and said connector from moving apart when in use.

4,270,779

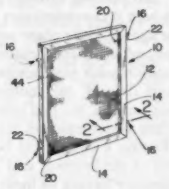
LOCKING DEVICE FOR REMOVABLE FRAME STRUCTURES

John R. Watts, 18 Hammond St., Brighton, 3186, Australia

Filed May 18, 1979, Ser. No. 40,322

Int. Cl.³ E05C *1/04*

U.S. Cl. 292—175 **4 Claims**



1. A locking device for fly screen and like frame structures comprising a pin member adapted to be spring-biased within a frame section of said frame structure, said pin defined by an elongated shank member of a predetermined diameter and a head member having at least one radially extended protrusion projecting from the side of said head, said head having a diameter larger than that of said shank member, and including a biasing spring means adapted to force said head member into a locking position and extending outwardly from said frame section, wherein said spring means includes a coil spring in which said spring has a longitudinal axis which is of a curved configuration in the undeformed state, whereby the forces created thereby maintain said spring in a substantially straightened configuration providing frictional force between said spring and said shank, thus preventing longitudinal motion therebetween prior to said pin and said spring being assembled within said frame section.

4,270,780

DOOR FASTENER

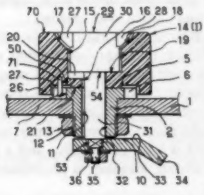
Pierre J. Bernard, Versailles, France, assignor to La Telemecanique Electrique, France

Filed Jun. 21, 1979, Ser. No. 50,857

Claims priority, application France, Jun. 21, 1978, 78 18517

Int. Cl.³ E05B *13/10, 65/06;* E05C *3/04, 3/06*

U.S. Cl. 292—202 **8 Claims**



1. A fastening device for a door having inner and outer wall surfaces and an opening therethrough, said fastening device comprising: a bearing having a cylindrical body passing through the said opening, said cylindrical body having an internal diameter, first and second end portions and an annular collar integral with the said cylindrical body at the first end portion thereof, said cylindrical body having a threaded outer surface portion at the second end portion thereof and a nut cooperating with the said threaded surface portion, the said

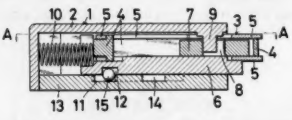
collar having a peripheral cutout extending over an angular sector thereof, the said nut engaging the said inner wall surface and securing the bearing in engagement with the said outer wall surface; an operating handle having a base plane wall portion and an opposite plane surface portion parallel to the base plane wall portion, the said base plane wall portion having a cylindrical opening which has an axis of symmetry at right angles with the said parallel surface portion, the diameter of the said cylindrical opening being substantially the same as the said internal diameter, the said handle further having a cylindrical housing coaxial with the said cylindrical opening and having a diameter which is larger than the diameter of the said cylindrical opening, said housing extending from the said base plane wall portion where it communicates with the said cylindrical opening to the said opposite plane surface portion where it opens; first and second slit-shaped cutouts provided in said handle in communication with said housing at two diametrically opposed regions thereof, said cutouts opening at said opposite plane surface portion, the said base plane wall portion having an inner surface which engages the said collar; a lock operating member having a cylindrical body pivoted in the said internal diameter of the bearing, said cylindrical body of the lock operating member having an inner end portion which projects from the second end of the said bearing; a latching member secured to the said inner end portion; and actuation means cooperating with the said lock operating member for rotating the said lock operating member through manual action.

4,270,781

OPENING AND CLOSING APPARATUS FOR DOORS AND THE LIKE

Tamotsu Nishimura, Osaka, Japan, assignor to Futaba Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1979, Ser. No. 43,644
Claims priority, application Japan, Feb. 28, 1979, 54-26071[U]
Int. Cl.³ E05C *19/16*
U.S. Cl. 292—251.5 **3 Claims**



1. An opening and closing apparatus for doors and the like, said apparatus comprising:

a hollow casing having an opening at one end; said casing adapted for mounting on a cabinet adjacent a door of said cabinet;

a sliding member positioned inside said casing for sliding into and for extending out of said casing;

magnetic means attached to said casing on the inside of said casing, said sliding member comprising metal plates located superposed on each side of said magnetic means for having a magnetic field transferred thereto; said metal plates having cutaway portions for allowing a maximum overlap with said magnetic means when said sliding member is positioned within said casing and a minimum overlap when said sliding member is positioned extending out of said casing;

an engaging member having said sliding member mounted thereon, said engaging member being slidably received within said casing;

spring means positioned within said casing adjacent said engaging member for urging said engaging member out from said casing;

lock means operatively associated with said engaging member for holding said engaging member within said casing when it is first manually pushed against the direction of urging of said spring means and for allowing said engaging member to slide and project from said casing when it is pushed manually a second time against the direction of urging of said spring means, said lock means comprising retaining means for holding at least a portion of said engaging member within said casing when said engaging member projects out from said casing with said sliding member; and

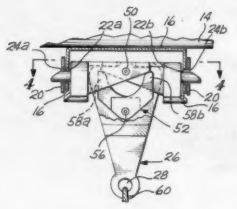
a magnetically attractable element adapted for mounting on the door of a cabinet for contacting said sliding member when the door is closed whereby the door can be held closed by closing the door and pushing said sliding member into said casing for having said lock means hold said engaging member in said casing thereby causing said metal plates to have a maximum overlap with said magnetic means and a maximum magnetic force transferred thereto for holding said magnetically attractable element against said sliding member, said door being opened by pushing said sliding member into said casing a second time for causing said lock means to release said engaging member thereby having said spring means move said sliding member out from said casing and reducing the overlap of said metal plates with said magnetic means for reducing the magnetic force acting on said magnetically attractable element for allowing said door to open.

4,270,782

DIRECTIONAL RELEASE TOGGLE LATCH

Richard J. LaConte, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 4, 1979, Ser. No. 72,385
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—288 **7 Claims**



1. A directional release toggle latch comprising: a pair of cooperating blocks each having an outwardly extending pin and an inwardly extending arm, a yoke shaped latch body to which the arms of the blocks are pivotally connected, means for preventing the blocks from rotating toward the latch body, and means for preventing the blocks from rotating away from the latch body with said body aligned perpendicular to the outward extending pins while permitting such rotation with the latch body aligned at an angle from perpendicular.

4,270,783

DOOR LOCK ACTUATOR

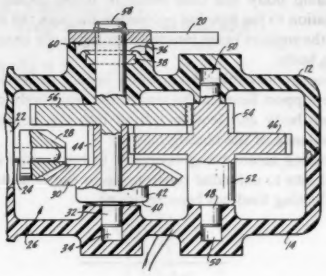
Ronald L. Sorensen, Rollingstone, Minn., and Dwight Whitfield, Bloomfield, Mich., assignors to Lake Center Industries, Winona, Minn.

Filed Jan. 24, 1979, Ser. No. 6,040
Int. Cl.³ E05C *13/04*
U.S. Cl. 292—336.3 **12 Claims**

1. In an actuator for use with vehicle door locks or the like, a housing, an electric motor in said housing, a first shaft journaled in said housing and extending outwardly therefrom, a door lock actuator member attached to said first shaft outside of said housing,

a first gear fast on said shaft, a second shaft journaled in said housing parallel to said first shaft, a dual gear rotatable with said second shaft and in driving relation with said first gear, a second gear freely rotatable on said first shaft and in driving relation with said electric motor, and a

drive connection between said second gear and dual gear, rotation of said motor causing respective rotation of said



second gear, dual gear, first gear and shaft thereby providing rotation of said actuator member.

4,270,784

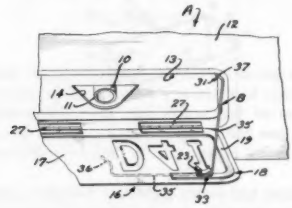
PROP MEANS FOR FACILITATING THE FUELING OF VEHICLES

Everett R. Vanover, 6700 Peachtree Industrial Blvd., Apt, M-8, Atlanta, Ga. 30360

Filed Apr. 21, 1978, Ser. No. 898,551

Int. Cl.³ E05C *17/12*

U.S. Cl. 292—338 **2 Claims**



1. Prop means for use in association with a vehicle having a body portion, a fuel tank provided with a conduit having an intake end for fueling said fuel tank, said vehicle body portion having a cavity providing access to said intake end of said fuel tank conduit, a cover-like member for concealing said cavity and said intake end of said conduit which opens thereinto, said cover-like member comprising a license plate carrying bracket having a license plate attached thereto, hinge means for attachment of said license plate carrying bracket to said vehicle body portion in a normally closed position with said cover-like member concealing said intake end of said fuel tank conduit and for movement thereof to an open position exposing said intake end of said fuel tank conduit for access thereto, and spring means urging said license plate carrying bracket to a normally closed position, said prop means comprising a substantially rigid elongated body portion having a butt end and a mounting end, said butt end being conformed for abutment with one said vehicle body portion and said cover-like member in positioning of said prop means in a juxtaposed relation thereto, and mounting means for attachment of said mounting end of said prop means to one said vehicle body portion and said cover-like member for pivotal movement of said prop means to an operative position of abutment of said butt end of said prop means to the other of said one said vehicle body portion and said cover-like member from the one having said mounting end of said prop means attached thereto and with said prop means extending between said vehicle body portion and said cover-like member in juxtaposed relation for maintaining said cover-like member in an open position to expose said intake end of said fuel tank conduit for facile access thereto and for pivotal movement of said prop means to an inoperative position to enable said cover-like member to move in a closed position concealing said intake end of said fuel tank conduit, said body portion of said prop means comprising an elongated rod, said mounting end thereof comprising a bight portion of said rod having a leg extending outwardly from and in a direction substantially normal to said body portion thereof, said leg being journalled for pivotal movement within said mounting means with the axis of said leg comprising the pivot axis of said prop means for pivotal movement thereof, and said butt end thereof comprising a sinuous leg of said rod extending in a direction substantially normal to said body portion thereof and in the same plane as said leg of said bight portion of said rod, said mounting means including fastener means for attachment thereof to said license plate carrying bracket and which also comprises a fastener means for attachment of said license plate to said license plate carrying bracket, said cavity of said vehicle body portion has a substantially rectangular peripheral configuration and along one side of which is attached said license plate carrying bracket, said rod being of a length for abutment of a concavity of said sinuous leg of said butt end of said rod at a corner of said substantially rectangular periphery of said cavity remote from the side thereof along which said license plate carrying bracket is mounted in said operative position of pivotal movement of said prop means.

4,270,785

TAPERED VEHICLE BUMPER SHIM AND METHOD

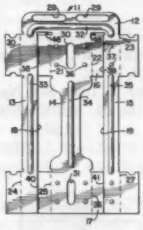
Robert G. Farnam, Stevens Point, Wis., assignor to F. D. Farnam Co., Necedah, Wis.

Filed Jul. 17, 1978, Ser. No. 925,057

The portion of the term of this patent subsequent to Jul. 10, 1996, has been disclaimed.

Int. Cl.³ B60R *19/02*

U.S. Cl. 293—1 **9 Claims**



1. A tapered shim for automobile bumpers and the like comprising:

a body portion having three parallel tines, two outer and one central tine, projecting therefrom and separated by elongated slots for the reception of mounting bolts;

front and rear load bearing areas on each of said tines;

each of said load bearing areas including a bent over flap integral with said body portion; and

metal inserts secured to two adjacent tines in the load bearing areas thereof by the adjacent flaps, the insert for the outer tine being of greater thickness than that of the center tine.

4,270,786

DUMPING WHEELBARROW

McKinley Mattox, 4910 Gratian, Los Angeles, Calif. 90022

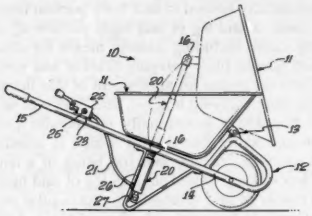
Continuation-in-part of Ser. No. 923,559, Jul. 11, 1978. This application Aug. 3, 1979, Ser. No. 63,189

Int. Cl.³ B62B *1/24*

U.S. Cl. 298—3 **4 Claims**

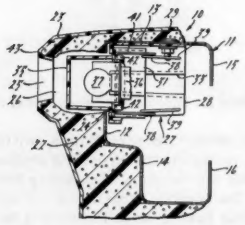
1. A dumping wheelbarrow capable of providing a forward tilt to the barrow while maintaining the legs of the wheelbarrow on the ground, said dumping wheelbarrow comprising:

a frame member having first and second arms terminating in a pair of handles integral therewith;
a wheel held to said frame at the opposite end of the frame from the handle;
a barrow having a sloping front side, a bottom surface and back side, said barrow being pivotally attached at a forward barrow pivot to said frame near the mid point of its sloping front side, the pivot point of said barrow being adjacent said sloping front side near the mid point thereof;



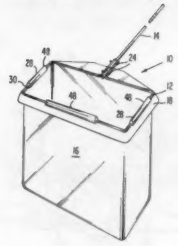
hydraulic piston means affixed at its lower end to said frame and its upper end to said barrow near the longitudinal central axis of the bottom surface nearer to the back than to the front side thereof;
hydraulic pump means affixed to the frame and having hydraulic line means connected to said hydraulic piston; and
handle means affixed to the pump means whereby the movement of said handle means causes hydraulic fluid to flow into said piston when it is in a retracted position causing said piston to extend thereby causing said barrow to pivot upwardly in a dumping action.

4,270,787
DISPLACEABLE LAMP
Charles L. Savell, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 3, 1980, Ser. No. 126,926
Int. Cl.[3] B60R *19/08*
U.S. Cl. 293—121 **4 Claims**



1. In combination, a vehicle bumper comprising a hollow rigid support beam having a resiliently deformable impact energy absorbing body extending over the impact face of the beam;
the impact face of the beam and the energy absorbing body covering the same having axially aligned openings therethrough;
and a lamp assembly mounted within the bumper;
the lamp assembly comprising a housing secured to the beam interiorly of the latter in axial alignment with the opening therein;
a lamp body;
the housing and lamp body being telescopically slidable relative to one another;
a lens mounted on the lamp body;
and a biasing means between the housing and the lamp body normally maintaining the two telescopically extended;
the lamp body and lens when in telescopically extended relation to the housing projecting through the impact face of the support beam into the opening in the energy absorbing body;
the energy absorbing body upon impact deflection toward the support beam in the area of the lamp body causing the lamp body and lens to retract into the housing against resistance of the biasing means;
the biasing means being operative to restore the lamp body and lens to extended relationship to the housing after the deflecting load has been removed.

4,270,788
BAG HOLDING DEVICE
Ronald Overholt, 220 Winding Way, Morrisville, Pa. 19067
Filed Mar. 10, 1980, Ser. No. 129,008
Int. Cl.[3] A47F *13/08*
U.S. Cl. 294—55 **11 Claims**

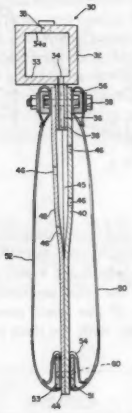


1. A bag holding device, for holding a bag in an open position, which comprises:
(a) a frame means in a generally loop-shaped configuration including a gripping surface adapted to receive and hold the opening of a bag thereover and hold the bag in an open position;
(b) a handle means attached with respect to said frame means and extending outward therefrom to facilitate holding of the open bag in the desired orientation;
(c) a flexible means secured along at least a portion of said gripping surface of said frame means and protruding outwardly therefrom, said flexible means adapted to resiliently flex inwardly toward said gripping surface responsive to a bag being pulled downwardly thereover and responsive to resiliently reflex to a position protruding outwardly from said gripping surface when the bag is removed therefrom; and
(d) a retaining means being detachably securable with respect to said frame means along said gripping surface thereof to selectively retain the bag in an open orientation extending over said flexible means, said retaining means including a gripping means adapted to abut said gripping surface during securement with respect thereto to pull the bag along said gripping surface in opposite directions to compress said flexible means inwardly toward said frame means by similar inwardly directed force exerted thereagainst by the bag.

4,270,789
AIRBAG SETTER

Jack Cline, Clarksville, Ark., assignor to Clarksville Machine Works, Inc., Clarksville, Ark.

Filed Oct. 9, 1979, Ser. No. 82,871
Int. Cl.[3] B66C 1/46
U.S. Cl. 294—63 A 3 Claims



1. In a brick setting apparatus of the type having a vertically and horizontally movable frame, a plurality of spaced gripper members depending from said frame and between which spaced rows of brick are gripped, then lifted and moved the improvement whereby each of said spaced gripper members comprises:

(a) a tubular member extending above and parallel to the space between two adjacent rows of brick and forming a manifold connecting a source of positive and negative air pressure with the gripping member therebelow;

(b) a pair of plate members depending from said tubular member and extending along a path substantially parallel to and equal in length to the rows of bricks being lifted, means for separating said plate members at the top thereof adjacent said manifold, said plate members converging and secured together at the bottom thereof;

(c) an attachment strip removably secured to the outer surface of each of said plate members along the bottom edge thereof;

(d) a separate sheet of air impervious flexible material having the bottom edge thereof positioned intermediate each of said attachment strips and the corresponding surface of each of said plate members, said sheet protruding from the space between said attachment strip and said plate member, means for attaching the upper edge of said sheet to the upper edge of said plate member, the corresponding side edges of each of said separate sheets being secured together thereby forming an air bag on either side of said plate members;

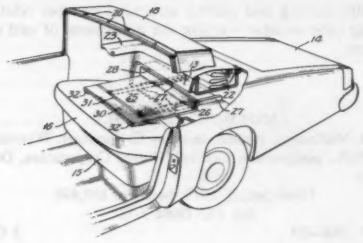
(e) cooperating openings in said plate member separating means and said plate members for providing an air path between the source of positive and negative air pressure and the interior of each of said air bags;

(f) whereby said air bags may be expanded to a gripping position by introduction of air into said air bags and relaxed to a release position by evacuation of air from said air bags while maintaining control of the bag shape.

4,270,790
CONVERTIBLE SEAT AND STORAGE DEVICE FOR AUTOMOBILES

Richard L. Curotto, Sayerville, N.J., assignor to Stutz Motor Car of America, Inc., New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,280
Int. Cl.[3] B60N 3/12
U.S. Cl. 296—37.16 10 Claims

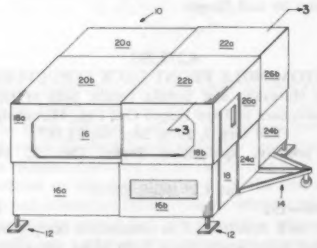


1. In a vehicle body construction wherein a seat-back element has a hinged mounting enabling said seat-back element to be selectively moved between an upward generally vertical position at the rear of a generally horizontal seat element and a downwardly folded generally horizontal lower position in at least partial overlap with said seat element and wherein storage space exists within the body to the rear of said seat and seat-back elements, the improvement wherein body-mounted generally horizontal guide means extends rearward within said storage space and in proximity to said seat and seat-back elements, wherein a tray member has generally longitudinally movable support via said guide means, and wherein a connection from said tray member to said seat-back element above and offset from the hinge axis determines forward tray-member displacement upon downward folding displacement of said seat-back element and rearward tray-member displacement upon upward positioning displacement of said seat-back element.

4,270,791
EXPANSIBLE ENCLOSURE

Robert L. Tann, 4 Colony Blvd., Apt. 406, Wilmington, Del. 19802

Filed Oct. 25, 1978, Ser. No. 954,529
Int. Cl.[3] B60P 3/32
U.S. Cl. 296—171 8 Claims



1. An expansible enclosure comprising:

a box-like structure having six sides interconnected at their respective peripheries, said sides arranged in opposed pairs, four of said sides being expansible, two opposed sides being fixed in lateral dimensions; and

at least two telescoping frame means, said frame means being perpendicular to each other, and each of said frames means being integral and co-planar with an expansible side

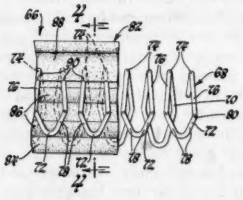
of said box-like structure, each of said frame means interconnecting a pair of opposed sides, each of said frame means telescoping to move their respective pairs of opposed sides, interconnected by said frame means, toward and away from each other for varying the dimensions of said enclosure in two dimensions, wherein each of said frame means includes a substantially longitudinal tube member and a complimentary substantially longitudinal interior structural member telescopically movable relative to said tube member and translational means for telescopically moving said interior structural member relative to said tube member varying the dimensions of said enclosure.

4,270,792

MOLDING ASSEMBLY

John N. Mathieson, Romeo, and Roy C. Spranger, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 5, 1979, Ser. No. 100,498
Int. Cl.³ B60J 1/00
U.S. Cl. 296—93 **3 Claims**



1. In a vehicle body having a window opening of predetermined planar configuration with a flange disposed in said plane and a window panel having a planar configuration corresponding to said plane of said window opening and disposed in said opening parallel to said plane but spaced therefrom by a gap, an improved molding assembly comprising: a decorative body portion, carrier means having a first portion encapsulated in said body portion and a second portion projecting from said body portion, said carrier means being disposed on said flange with said second portion being located in said gap and said first and said second portions straddling said flange thereby to mount said body portion adjacent said window opening, and a bead of cured material in said gap between said window panel and said flange operative to retain said window panel on said body and to encapsulate a part of said second portion of said carrier means thereby to retain said carrier means and said body portion on said flange.

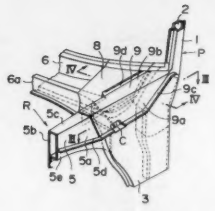
4,270,793

AUTOMOBILE FRONT DECK STRUCTURE

Hayatsugu Harasaki, and Yutaka Imura, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 2, 1979, Ser. No. 81,187
Claims priority, application Japan, Oct. 2, 1978, 53-135800[U]
Int. Cl.³ B60K 20/08
U.S. Cl. 296—192 **6 Claims**

1. Front deck structure of an automobile body which comprises a dash panel assembly, a front pillar assembly at each side of the dash panel assembly and a longitudinally extending reinforcement assembly, said front pillar assembly including lower and upper pillar structures which are connected together with an overlapped relationship, said front pillar assembly having outer and inner panels respectively providing an outer surface and an inner surface of said front pillar assembly, said dash panel assembly including a dash panel extending transversely and having a side edge adjacent to the outer surface of each front pillar assembly, said longitudinal reinforcement assembly including outer and inner panels which respectively have rearward extensions having rear edges adjacent to the dash panel, said outer panel of the front pillar assembly and said extension of the outer panel of the longitudinal reinforcement assembly being formed with outwardly bent flanges which are welded together with the side edge of the dash panel interposed therebetween, said inner panel of the



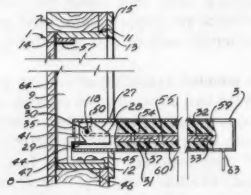
front pillar assembly and said extension of the inner panel of the longitudinal reinforcement assembly being formed with laterally bent flanges which are welded to the dash panel so that the inner panel of the pillar assembly is substantially opposite to the extension of the inner panel of the longitudinal reinforcement assembly with the dash panel interposed therebetween.

4,270,794

RETRACTABLE SEAT STRUCTURE

Dale E. Lewis, 328 E. Canal, Brookfield, Mo. 64628

Filed Aug. 27, 1979, Ser. No. 70,140
Int. Cl.³ A47C 9/06
U.S. Cl. 297—14 **4 Claims**



1. A retractable seat structure for movement between an open, extended position and a folded, retracted position and comprising:

(a) a frame for mounting within a wall and having spaced, upright end members and upper and lower members;

(b) an elongate rod member extending across said frame and having opposite ends secured to said spaced end members and positioned above said lower member;

(c) spaced seat support brackets respectively including arm portions and flange portions extending normally from said arm portions, said arm portions having apertures with said rod members extending therethrough whereby said brackets are swingably suspended from said rod member;

(d) a seat assembly having a seat panel member with upper and lower surfaces and front, rear and opposite end margins forming front and rear corner portions, the panel member being secured to said brackets and swingable therewith with said rear corner portions received in respective said brackets and said flange portion secured to said lower surface; the upper surface having a cushion covering providing a seating surface;

(e) spaced stop members for limiting swinging movement of said seat assembly relative to said frame and mounted on said frame lower member respectively adjacent said

brackets and having leg portions extending upwardly and outwardly extending arm portions positioned to engage said bracket flange portions whereby said stop members prevent further downward swinging of said seat panel member when said seat assembly is in an open, extended position; and

(f) a coil spring member sleeved on said rod member and having a first end portion non-rotatably affixed to said rod member and a second end portion extending laterally outward from said rod member and affixed to a surface of said panel member; the coil spring being torsionally responsive to relative movement between said seat assembly and said frame and of a torsional strength relative to the weight of said seat assembly whereby said seat assembly, when folded upwardly into a retracted position, remains in said retracted position and, when swung downwardly into said extended position, remains in said extended position.

4,270,795

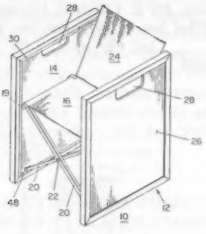
FOLDING CHAIR

Joseph V. Warren, 517 15th St., Huntington Beach, Calif. 92648

Filed Dec. 13, 1978, Ser. No. 968,977

Int. Cl.³ A47C *4/28*

U.S. Cl. 297—45 **8 Claims**



1. A chair having two rectangular side members having grooves therein, a folding seat the opposite sides of which slide vertically in said grooves, pivoting cross member supports for the seat, the upper ends of each support carrying the opposite sides of the seat and the lower ends of each being rotatably affixed to the side members, and a folding back comprising means rotatably connecting the folding back adjacent its opposite upper extremities to each of the rectangular side members, and means for securing the folding back at its opposite lower extremities to the seat at a predetermined angle.

4,270,796

RECLINING CHAIR WITH LEG REST OPERATING MECHANISM

William B. Preston, 3620 Stewart Rd., Monroe, Mich. 48161

Filed Jun. 12, 1979, Ser. No. 47,714

Int. Cl.³ A47C *1/02*

U.S. Cl. 297—69 **10 Claims**

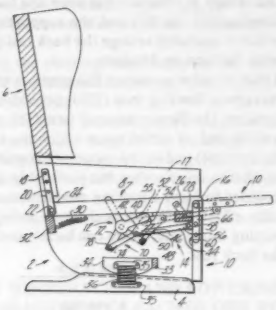
1. In a reclining chair having a frame, a chair back pivotally mounted on the frame for movement from an upright sitting position to a reclining position, a chair seat supported by the frame and having a rear end pivotally interconnected with the back, whereby the seat moves substantially horizontally relative to the frame with the back as the latter moves between its positions, the improvement comprising:

a leg rest pivotally connected to the front end of the seat;

linkage means supported by and movable with said seat and connected to said leg rest for moving the leg rest between a retracted position and an extended, horizontal position;

drive means mounted on said frame and connected to the linkage means for actuating the linkage means to move the leg rest; and

lost motion means comprising part of the linkage means and connected to the drive means for permitting movement of



the seat relative to the frame independently of the functioning of the drive means and the position of the leg rest.

4,270,797

ERGONOMIC CHAIR

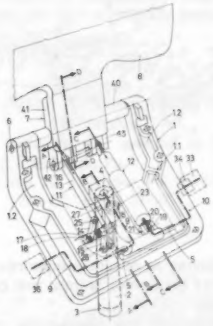
Egon Bräuning, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned B.V., Amsterdam, Netherlands

Filed Oct. 12, 1979, Ser. No. 84,232

Claims priority, application Switzerland, Oct. 20, 1978, 10888/78

Int. Cl.³ A47C *1/032*

U.S. Cl. 297—300 **4 Claims**



1. An ergonomic chair having a chair column (3) which is adjustable in height, a supporting arm (4) fitted to the upper end of the chair column, a seating supporting frame (1), the front end region of which is articulated for vertical pivoting (at 5) on the radially outer end of the supporting arm, a backrest (8) articulated on the rear end (at 6) of the seat supporting frame (1) and connected for movement with the seat supporting frame and the supporting arm through a connection construction (7) and a movement guiding and return mechanism (11, 12) so that an alteration in the inclination of the back rest automatically causes a proportional alteration in the inclination of the seat supporting frame, characterised in that the movement guiding and return mechanism is composed of

(a) a first structural unit (11) having a two-armed steering lever which is connected at its rear end (at 16) to the back-rest connection construction (7), and the pivot point (25) of which is connected through a first pair of links (14) to said supporting arm (4) and the front end of which (at

26) is connected through a second pair of links (15) to the seat supporting frame (1), and

(b) a second structural unit in the form of a compression-spring device (12) which can be adjusted by reaction force and which is effective between the back-rest connection construction (at 16') and the supporting arm (at 21) and which is intended to urge the back rest (8) into the position with the least inclination;

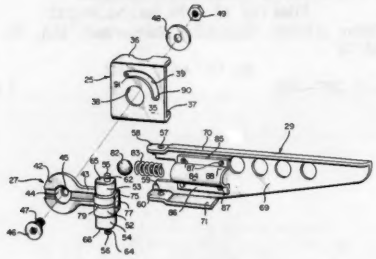
and that in order to secure this position of least inclination a movement limiting stop (27) is provided which is effective between the first structural unit (11) and the supporting arm (4) and on action upon which the longitudinal axes of the first (14) and of the second (15) pair of links lie at least parallel to one another but preferably diverging upwards, in order to form a locking mechanism which is automatically effective for vertical loads acting on the seat supporting frame and which can be released by swinging back the back rest.

4,270,798

BREAKAWAY ARM FOR SEAT

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach & Car Equipment Corporation, Elk Grove Village, Ill.

Filed Jul. 10, 1979, Ser. No. 56,330
Int. Cl.³ A47C 7/54
U.S. Cl. 297—417 **7 Claims**



1. In a seat having an occupant-supporting portion, a back and rigid frame, a breakaway armrest unit comprising:

a link member;

means mounting said link member for pivotal movement relative to said rigid seat frame, through a vertical first plane, between horizontal and vertical dispositions of the link member;

an armrest;

means connecting said armrest to said link member for unitary movement of the armrest with the link member about the pivotal axis of the link member;

said connecting means also comprising means mounting said armrest for arcuate movement through a second plane, transverse to said first plane, and about a pivotal axis transverse to the pivotal axis of said link member, between a first position, in which said armrest constitutes an extension of said link member, and a second position in which the armrest is folded back alongside said link member;

said armrest comprising gravity means for urging said link member toward its horizontal disposition when the armrest is in its first position and for urging the link member toward its vertical disposition when the armrest is in its second position;

a bearing element on said link member, adjacent said armrest;

said bearing element having an arcuate bearing race corresponding to the arc of movement of said armrest as it pivots between its first and second positions, said arcuate bearing race having a pair of opposite ends;

a bearing ball associated with said armrest;

means on said armrest for urging said bearing ball against said arcuate bearing race;

a first socket on said bearing element, at one end of said arcuate bearing race, for receiving said ball when the armrest is in its first position;

a second socket on the bearing element, at the other end of the arcuate bearing race, for receiving said ball when the armrest is in its second position;

and groove means on said bearing race, between said first and second sockets, for guiding said bearing ball between said sockets;

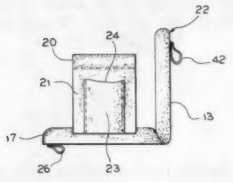
said urging means comprising means normally holding said bearing ball in a socket and for permitting said bearing ball to be displaced from said socket in response to a predetermined unlocking force in the direction of said arcuate movement.

4,270,799

MODULAR CHAIR APPARATUS

Dennis M. Flaum, 260 E. Chestnut, Chicago, Ill. 60610

Filed Jun. 8, 1979, Ser. No. 46,611
Int. Cl.³ A47C 7/00
U.S. Cl. 297—440 **6 Claims**



1. A modular disassemblable chair apparatus comprising:

an integrated tubular frame,

said frame having an independent first side frame member and an independent second side frame member assemblable one to the other to form said frame,

each said frame member, having a horizontal base seqment,

an upwardly extending leg segment integral with said base portion,

an arm segment integral with and extending rearward from said leg segment, and

a back segment integral with said arm segment and extending generally coplanar with said arm segment;

said frame, when assembled, having said leg segments oppositely disposed one from the other, and said arm segments oppositely disposed one from the other;

a frame brace extending generally horizontally between said first and second leg segments;

means to removably secure said brace to said leg segments; and

a chair upholstery assembly,

said upholstery assembly having a generally quadrilateral seat portion having four edges,

a pair of side wing segments extending from an opposed pair of said edges,

a seat back segment extending from a third of said edges; and

means terminating each said wing segment and integral with said wing segment to suspend each said wing segments from one said arm segment of said frame,

means to secure said back segment of said seat assembly to said back frame segment, and

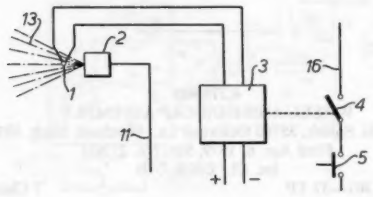
means to removably secure said seat portion to said frame brace proximate the fourth of said edges.

4,270,800

PRE-START WARNING DEVICE FOR A MACHINE

Michael J. Barry, Pontefract, England, assignor to Dresser Europe S.A., Brussels, Belgium

Filed Apr. 2, 1979, Ser. No. 26,207
Claims priority, application United Kingdom, Apr. 12, 1978, 14436/78
Int. Cl.³ E21C *35/04*
U.S. Cl. 299—1 **6 Claims**



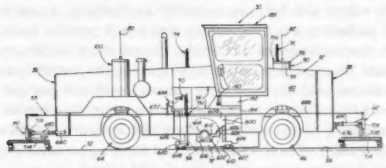
1. A machine pre-start warning device comprising a water spray nozzle, a temperature dependent resistor located with respect to the nozzle to lie in a water jet emitted in use by the nozzle, a control circuit connected to the temperature dependent resistor to be actuated thereby upon the resistor sensing a water jet and means to enable machine start-up to occur in response to actuation of the control circuit and to prevent machine start-up from occurring unless the circuit is actuated.

4,270,801

STEERING AND CUTTER DRUM POSITIONING IN A PAVED ROADWAY PLANING MACHINE

George W. Swisher, Jr., Oklahoma City; Donald W. Smith, Edmond, and Larry W. Teel, Yukon, all of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Filed Aug. 14, 1979, Ser. No. 66,336
Int. Cl.³ E01C *23/12*
U.S. Cl. 299—1 **23 Claims**



1. A construction machine for doing work on a work surface, comprising:

a chassis, having a forward end, a rear end and opposing first and second sides extending generally between the forward end and the rear end;

a plurality of transporters attached to the chassis for supporting the chassis above the work surface and moving the construction machine therealong, wherein the transporters are pivotally connected to the chassis for pivotation about axes generally perpendicular to the work surface;

a hydraulic pump mounted on the chassis;

means for operating the hydraulic pump;

a hydraulic ram connected between the chassis and each transporter, each ram connectable to the pump for turning the transporters about said axes;

a steering mechanism carried by the chassis;

a normally closed valve for each hydraulic ram carried by the chassis, each valve being hydraulically connected between its respective ram and the pump, whereby each valve is associated with a specific one of the transporters;

a representation member for each transporter, each representation member being pivotally mounted on the chassis and each representation member carrying the valve associated with the representation member's respective transporter;

means connecting the steering mechanism to the valves for opening the valves selective amounts when the steering mechanism is operated; and

feedback means connected between each transporter and its respective representation member for pivoting the representation members so as to progressively close the valves as the transporters are turned about said axes to bring said valves to closed positions when the respective transporters are turned about said axes the desired amounts.

4,270,802

PERMEABILITY RESTORATION AND LOWERING OF URANIUM LEAKAGE FROM LEACHED ORE BEDS

David C. Grant, Pittsburgh, and Herbert A. Burgman, Murrysville, both of Pa., assignors to The United States of America as represented bythe Secretary of the Interior, Washington, D.C.

Filed Jan. 3, 1980, Ser. No. 109,361
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—5 **6 Claims**

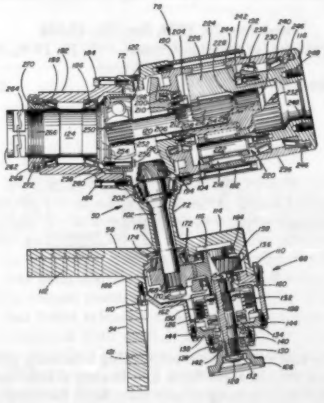
1. In a process for the in-situ mining of uranium comprising the steps of injecting an alkaline leach solution containing an oxidant into a subterranean uranium ore bed, pumping to the surface leach solution containing uranium values in solution, and continuing said injecting and pumping operations until mining is no longer practical because of the reduced permeability of said ore bed, the improvement comprising the steps of injecting into the leached ore bed an aqueous ammonium sulfite or bisulfite solution to improve the permeability of said bed, and thereafter injecting alkaline leach solution containing an oxidant into said ore bed to recover additional uranium values from said ore bed.

4,270,803

CUTTER DRUM DRIVE ASSEMBLY FOR CANTED END SECTIONS

Gerald L. Baum, Belleville, Ill., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Sep. 20, 1979, Ser. No. 77,323
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—76 **22 Claims**



1. A continuous mining machine comprising,

a body portion having a longitudinal axis,

propelling means supporting said body portion for advancing said body portion,

a boom member pivotally secured to said body portion and extending forwardly therefrom,

a drum member rotatably mounted on the front of said boom member transversely to said body portion, said drum member having cutting elements extending therefrom,

said cutting elements being arranged on said drum member to provide a continuous cutting pattern along the length of said drum member,

said drum member having an intermediate drum section and a pair of canted end drum sections,

said pair of canted end drum sections extending angularly from the ends of said intermediate drum section respectively,

said pair of canted end drum sections being spaced from said intermediate drum section to form a pair of openings between said intermediate drum section and said respective canted end drum sections,

power means mounted on said body portion for rotating said drum member,

drive means for transmitting rotation from said power means to said drum member,

said drive means including input drive shaft means for transmitting rotation to said canted end drum sections,

said input drive shaft means extending from said power means angularly relative to said body portion longitudinal axis through said pair of openings,

output drive means drivingly connected to said input drive shaft means for transmitting rotation from said canted end drum sections to said intermediate drum section,

said input drive shaft means including a first input shaft and a second input shaft,

said first and second input shafts each including a first end portion and a second end portion,

said first input shaft first end portion being drivingly connected to said power means,

said second input shaft first end portion being drivingly connected to a respective one of said canted end drum sections,

said first and second input shaft second end portions being drivingly connected to each other,

a helical gear nonrotatably connected to said second end portion of each of said first and second input shafts, and

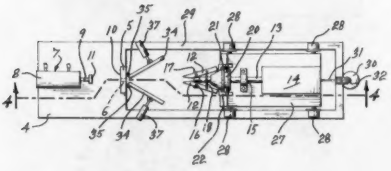
said helical gear of said first input shaft meshing with said helical gear of said second input shaft.

4,270,804

PUFF DUSTER AND MOP-MAKING MACHINE

Nicolas Boulachanis, 5391 Park Ave., Montreal, Canada (H2V 4G9)

Filed Feb. 26, 1979, Ser. No. 15,093
Claims priority, application Canada, Feb. 28, 1978, 297846
Int. Cl.³ A46D 9/00
U.S. Cl. 300—16 **8 Claims**



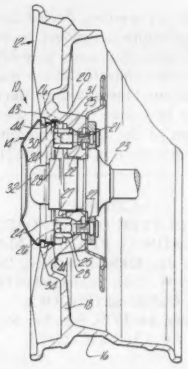
1. A mop-making machine comprising a holding plate having first and second main faces and having a hole extending therethrough and opening at said main faces for receiving the legs of a U-shape wire having flexible mop strands extending transversely between said legs and placed against the bight of the U-shape wire and with said bight protruding from said first main face and with said legs protruding from said second main face, pusher means mounted opposite said first main face of said holding plate and operable to engage said bight and push the same towards said holding plate to cause said bight to press said transversely-extending strands against said first main face of said holding plate with sufficient pressure to prevent rotation of said bight and strands relative to said holding plate during twisting of the wire legs, rotatable pincer means disposed opposite the second main face of said holding plate and rotatable about an axis in alignment with said hole and removably clamping the free ends of the legs of said U-shape wire to cause twisting of said wire legs during rotation of said pincer means, and means to rotate said pincer means about said axis.

4,270,805

WHEEL AND HUB CAP ASSEMBLY

Edward G. Spisak, 35700 Oakwood La., Westland, Mich. 48185

Filed Apr. 6, 1979, Ser. No. 27,871
Int. Cl.³ B60B 7/06
U.S. Cl. 301—37 TP **7 Claims**

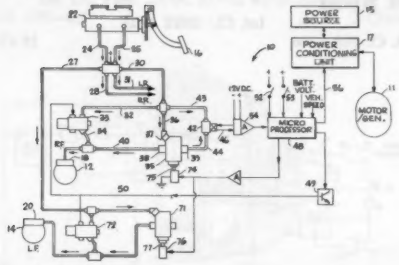


1. A wheel and hub cap assembly comprising: a cast metal wheel including a tire mounting rim, a hub portion including wheel mounting holes uniformly spaced on a circle coaxial with said wheel, a generally disc-shaped spider portion extending between said tire mounting rim and said hub portion and formed integrally therewith, said hub portion forming an axially extending recess with a substantially cylindrical wall radially outwardly of said bolt circle and forming an access opening adjacent an outboard edge of said wheel, a continuous annular groove formed in said wall and opening radially inwardly relative to the axis of said wheel, said groove being disposed axially outwardly of said wheel mounting opening and axially inwardly of said access opening, a hub cap for closing said access opening, said hub cap having circumferentially spaced and radially extending resilient retaining elements disposed in said groove, a rigid guide surface between said groove and the outer end of said recess, said guide surface being adapted to engage said retaining elements for gradually deflecting the latter radially inwardly upon axial movement of said cap relative to said wheel to permit displacement of said retaining elements radially inwardly and entry into said groove upon attachment of said hub cap to said wheel, said retaining elements simultaneously engaging the axially inner and outer walls of said groove to limit axial inward and outward movement relative to said wheel and maintaining the remainder of said hub cap in close spaced relation to said access opening to substantially close said recess.

4,270,806
COMBINED HYDRAULIC AND REGENERATIVE BRAKING SYSTEM

Rama R. Venkataperumal, Troy, and Gerald E. Mericle, Mount Clemens, both of Mich., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 9, 1979, Ser. No. 65,033
Int. Cl.³ B60T *13/74*
U.S. Cl. 303—3 **7 Claims**



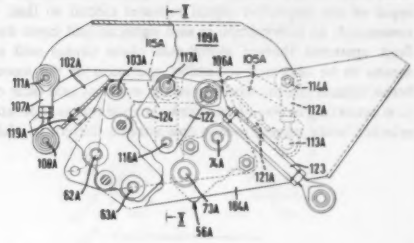
1. A combined hydraulic and regenerative braking system, comprising:
a first wheel;
a brake assembly for said wheel;
a hydraulic brake line connected to said assembly;
means for creating increased pressure in said brake line for application to said brake assembly for actuating said brake assembly to brake said wheel;
a motor generator rotatably connected to said wheel; and
means responsive to a predetermined level of said created pressure for controlling the degree of hydraulic braking and for controlling said motor generator to be driven as a generator by said wheel,
said responsive means being responsive to hydraulic pressure in said brake line to control braking of said wheel to be completely hydraulic up to a first level of said created pressure, to control braking to be partially hydraulic at a constant hydraulic braking force and partially regenerative at a linearly increasing regenerative braking force from the first level of created pressure to a higher second level of said created pressure, to control braking to be partially hydraulic at a linearly increasing hydraulic braking force and partially regenerative at a linearly decreasing regenerative braking force from the second level of said created pressure to a third and still higher level of said created pressure, and to control braking to be completely hydraulic at a linearly increasing hydraulic braking force from the third level to all higher levels of said created pressure.

4,270,807
VEHICLE FLUID PRESSURE BRAKING SYSTEMS AND LEVER MECHANISMS FOR USE THEREIN

Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Mar. 1, 1979, Ser. No. 16,380
Claims priority, application United Kingdom, Mar. 2, 1978, 08250/78
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—22 R **10 Claims**

1. A variable ratio lever mechanism comprising:
a frame;
a lever having means for transmitting one load, a first pivotal connection for transmitting another load and a second pivotal connection for reacting the loads transmitted by the lever onto the frame;
a control link connected to the lever by one of said pivotal connections;
and a reaction link of substantially the same effective length as the control link pivoted on the frame and operatively connected to the control link; the arrangement being such that the control link has a longitudinal axis which normally intersects a perpendicular line joining the axes of the

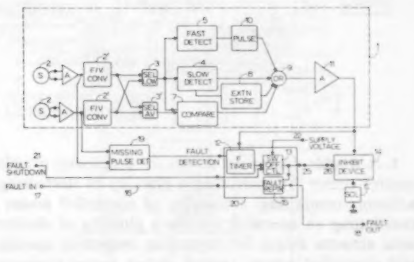


pivotal connections at an angle which is substantially less than 90°, which angle is variable by pivotal movement of the control link to vary the effective moment arm which said other load makes with the second pivotal connection, and such that the reaction link has a longitudinal axis which lies substantially parallel to the longitudinal axis of the control link over the normal operating range of pivotal moment of the control link.

4,270,808
ANTI-LOCK BRAKE CONTROL SYSTEMS FOR MULTI-AXLE VEHICLES

Malcolm Brearley, Solihull, England, assignor to Girling Limited, Birmingham, United Kingdom

Filed Apr. 16, 1979, Ser. No. 30,433
Claims priority, application United Kingdom, Apr. 22, 1978, 16005/78
Int. Cl.³ B60T *8/04*
U.S. Cl. 303—92 **5 Claims**



1. A multi-axle wheeled vehicle comprising a respective brake for each axle, a respective speed sensor associated with each axle, a respective brake release means associated with each axle and responsive to the respective speed sensor to release the respective brake on the occurrence of a skid condition at that axle, a respective inhibit means associated with each brake release means and being operable by inhibit operation of that brake release means, a respective fault detection circuit associated with each brake release means and being responsive to a fault condition in that brake release means to operate the respective inhibit means so as to inhibit operation of the associated brake release means, a respective signal repeater circuit associated with each brake release means and having an input and an output, means connecting the inputs and outputs of the signal repeater circuits in series to form a

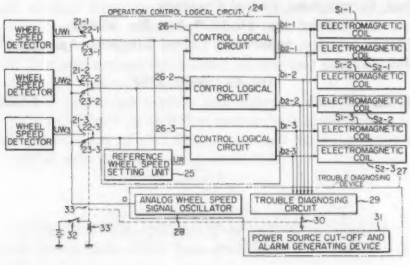
chain so that a signal applied to the input of the first repeater circuit in said chain will normally be propagated along said chain to the output of the last repeater circuit in said chain, each signal repeater circuit being responsive to the respective fault detection circuit so as to interrupt the passage of said signal along said chain upon the occurrence of said fault condition, and a respective shutdown connection means associated with each inhibit means and for optional connection to the input of the respective signal repeater circuit so that, when connected, an interruption in said signal at said input due to a fault upstream thereof along said chain causes said inhibit means to be operated to inhibit operation of the associated brake release means, whereby in the event of said fault condition occurring in one of said brake release means, operation of selected brake release means downstream thereof is inhibited.

4,270,809

DEVICE FOR DIAGNOSING TROUBLE IN A CONTROL CIRCUIT FOR ELECTROMAGNETIC ACTUATORS

Taiji Ohmori, Kawagoe, and Makoto Sato, Kamifukuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1979, Ser. No. 35,539
Int. Cl.³ B60T *17/22*
U.S. Cl. 303—92 **14 Claims**



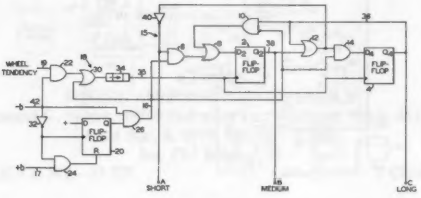
1. A trouble diagnosing device for diagnosing trouble in a control circuit for controlling a plurality of electromagnetic actuators comprising: a plurality of controlled means each constituting an operating system; a plurality of electromagnetic actuator means for controlling respective operation of said controlled means; control circuit means connected to receive a plurality of mutually independent input signals representative of the same information supplied to said respective controlled means for producing a plurality of paired output signals for individually controlling the operations of said electromagnetic actuator means; analog signal oscillator means for feeding a trouble diagnosing analog signal to said control circuit means; analog signal producing logical circuits each including a logical exclusive OR circuit adapted to receive the paired output signals of said control circuit means and produce, after logical processing of said paired output signals, a single output signal; and a trouble discriminating logical circuit connected to said analog signal producing logical circuits for producing an output signal indicative of trouble in said control circuit means when said output signals of said logical exclusive OR circuits includes an abnormal signal.

4,270,810

CIRCUIT FOR INFLUENCING THE BRAKE-PRESSURE RELEASE AND/OR BRAKE-PRESSURE HOLDING PHASES FOR ANTILOCKING VEHICLE BRAKE SYSTEMS

Gerhard Ruhnau; Wolfgang Gudat; Klaus Lindemann, and Manfred Saba, all of Hanover, Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,571
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819102
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—106 **15 Claims**



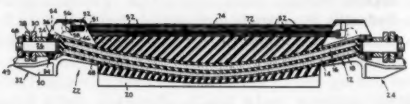
1. A switching circuit arrangement for controlling the brake pressure exhausting phase and brake pressure holding phase for antiskid vehicle braking apparatus when the measured velocity change differs from a given velocity change during controlled braking wherein the velocity change is obtained by measuring and forming different velocity values at the intervening limits of an assigned time Δt, characterized by, switching means having a plurality of inputs for accommodating acceleration and deceleration control signals as well as a signal representing the starting tendency signal of a monitored wheel of the vehicle, and bidirectional shift register means responsive to the switching means for establishing the assigned time Δt dependent upon the particulars of the acceleration and deceleration control signals and as a function of the wheel tendency signal.

4,270,811

BUCKLE PROOF WEAR RESISTANT ENDLESS TRACTION BAND

Wolfgang Trautwein, Huntsville, Ala., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Oct. 4, 1979, Ser. No. 81,928
Int. Cl.³ B62D *55/20, 55/24*
U.S. Cl. 305—11 **6 Claims**



1. Traction apparatus for a vehicle comprising first and second roller chains, means for supporting said roller chains on said vehicle for movement on parallelly spaced apart congruent paths which paths include a linear portion beneath the vehicle, a resilient endless band having a length corresponding to that of said roller chains and a width such as to span the space between said roller chains, said band having a convex outer surface and a concave inner surface and being resiliently deformable in response to loads imposed thereon, means for attaching respective side edges of said band to respective said roller chains so that in response to movement of said roller chains along said paths said band will correspondingly move, and a plurality of flexible tension resistant members having opposite ends fixed to said roller chains and extending therebe-

tween on the concave side of said endless band, said tension members being obliquely oriented and being substantially uniformly distributed along said roller chains to resist forces imposed on the concave surface of said band.

4,270,812

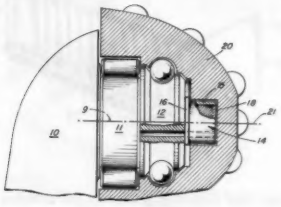
DRILL BIT BEARING

Robert D. Thomas, 104 N. Plum, Tonkawa, Okla. 74653

Continuation-in-part of Ser. No. 813,891, Jul. 8, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,745

Int. Cl.[3] **F16C** *33/06, 21/00;* **E21B** *10/22*

U.S. Cl. 308—8.2 **3 Claims**



1. In a rock bit having a leg, a bearing surface extending from said leg for journaling a roller cutter bit, said bearing surface including fluid cooling openings and a cylindrically-shaped bearing having a hard-metal face thereon and an end, an improvement in hard-facing said cylindrical bearing surface comprising a disc and a sleeve means formed of said hard-metal, said disc and said sleeve means having a prefinished interior and exterior surface; and, means including braze material for attaching said disc and sleeve means to said cylindrical bearing surface by dimensioning the external diameter of said bearing and the internal diameter of said prefinished interior of said sleeve means to allow insertion of said sleeve means over said bearing without substantial force and with a separation sufficient to cause said molten braze material to flow by capillary action, and positioning said disc over the end of said bearing, filling the space between said bearing and the interior surface of said sleeve means and under said disc, thereby causing said sleeve means to self-center on said bearing and said disc to attach to said end.

4,270,813

BEARING POSITIONING RETAINER

Noel D. Wiggins, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00641, § 371 Date Aug. 23, 1979 § 102(e) Date Aug. 23, 1979, PCT Pub. No. WO81/00604, PCT Pub. Date Mar. 5, 1981

This PCT application filed Aug. 23, 1979, Ser. No. 99,141

Int. Cl.[3] **F16C** *3/10*

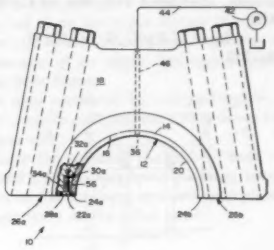
U.S. Cl. 308—23 **3 Claims**

1. In an apparatus (**10**) wherein a generally semicylindrical bearing shell (**12**) is mounted with a radially outwardly facing semicylindrical surface (**14**) thereof against a mating radially inwardly facing semicylindrical surface (**16**) of an associated member (**18**) with the ends (**24***a*, **24***b*) of the shell (**12**) forming a generally continuous surface (**26***a*, **26***b*) with said member (**18**) and with a radially inwardly facing surface (**20**) of the shell (**12**) positioned to receive a relatively rotating shaft, the improvement comprising:

a first pair of indentations (**22***a*, **22***b*) in said outwardly facing semicylindrical surface (**14**) of said shell (**12**), one at each end (**24***a*, **24***b*) thereof and communicating with said generally continuous surface (**26***a*, **26***b*);

a second pair of abutting indentations (**28***a*, **28***b*) in said inwardly facing semicylindrical surface (**16**) of said member (**18**), each of said second indentations (**28***a*, **28***b*) abutting a respective one of said first indentations (**22***a*, **22***b*) and communicating with said generally continuous surface (**26***a*, **26***b*); and

a pair of plugs (**30′***a*, **30′***b*), each being sized and shaped to fit in said first indentations (**22***a*, **22***b*) and said second indentations (**28***a*, **28***b*), each of said plugs (**30′***a*, **30′***b*) having a periphery (**50**) of a construction to exert a radial spring pressure against said respective first indentations (**22***a*, **22***b*) and said second indentations (**28***a*, **28***b*) sufficient to hold each of said plugs (**30′***a*, **30′***b*) therein.



4,270,814

THRUST BEARING

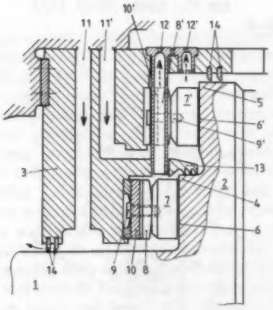
Hans Bellati, Wettingen, Switzerland, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Aug. 27, 1979, Ser. No. 70,105

Claims priority, application Switzerland, Oct. 2, 1978, 10217/78

Int. Cl.[3] **F16C** *17/10*

U.S. Cl. 308—160 **6 Claims**



1. A thrust bearing in combination with a rotating shaft comprising:

a bearing body;

a thrust collar on the shaft arranged in steps with radially inside and outside bearing surfaces offset axially with respect to one another; and

a plurality of bearing segments distributed over the circumference of the inside bearing surface and a plurality of bearing segments distributed over the outside bearing surface, with each bearing segment being disposed between the thrust collar and the bearing body; and

means flexibly mounting each of said bearing segments on said bearing body.

4,270,815

ROLLER BEARING

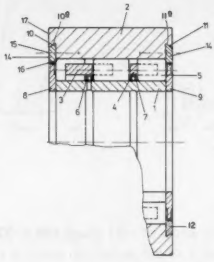
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt; Horst M. Ernst, Eltingshausen, and Heinrich Kunkel, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,729

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830818

Int. Cl.[3] F16C *19/24, 33/58*

U.S. Cl. 308—213 19 Claims



1. An edge ring adapted to be mounted in an annular groove in at least one of the bearing rings of a roller bearing, said edge ring being slit in at least one location about its periphery to define a separation joint and an insert member disposed between the confronting ends of the separation joint of the edge ring connected to the bearing ring and operable to seat the edge ring in the annular groove.

4,270,816

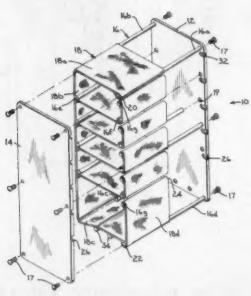
FURNITURE HAVING PRESTRESSED FABRIC PANELS

David L. Erickson, and Leonard W. Kitts, both of Milwaukee, Wis., assignors to Interface Design Group, Inc., Milwaukee, Wis.

Filed Jan. 23, 1979, Ser. No. 5,785

Int. Cl.[3] E04H *10/02, 1/12*

U.S. Cl. 312—3 23 Claims



1. A piece of furniture comprising:

a pair of spaced, rigid side plates having dimensions which define first and second dimensions of the piece of furniture;

a plurality of rods extending between said spaced side plates, said rods comprising the sole means for establishing and maintaining the third dimension of the piece of furniture, said rods being so located on said plates that pairs of rods demarcate the location of generally planar panel elements of the piece of furniture; and

a sheet of fabric stressed only in tension in a direction parallel to said side plates, said sheet being affixed solely to at least a pair of said rods for forming a generally planar panel element of the piece of furniture.

4,270,817

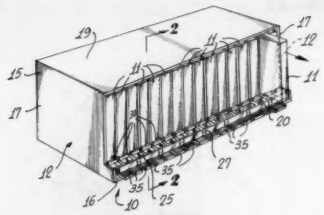
CASSETTE STORAGE AND DISPENSING DEVICE

William P. McRae, 22 Lincoln Court, Buena Park, Calif. 90620

Filed Feb. 23, 1979, Ser. No. 14,420

Int. Cl.[3] A47B *81/06*

U.S. Cl. 312—15 7 Claims



1. A storage and dispensing cabinet for articles such as tape and film cassettes and the like comprising:

a box-like plastic enclosure having a floor, two end walls, a back wall and a top, and having an open front;

a plastic base disposed within said enclosure and mounted on said floor, said base including a raised platform to support said articles within said enclosure and, first and second grooves extending along opposite sides of said platform, a plurality of equally spaced partitions projecting upwardly from said base and dividing said enclosures into a plurality of open-ended slots each adapted to slidably receive one of said articles, a plurality of openings each adjacent said open end of said slots, and indicia imprinted thereon identifying said slots;

a first elongated attachment strip disposed within said first groove and secured to said base;

a plurality of retention members integrally formed with said first attachment strip as a single plastic piece, each of said retention members comprising a resilient tab extending substantially perpendicularly from said first attachment strip and an upstanding abutment formed on said tab, and extending upwardly through one of said openings to engage the leading edge of one of said articles, the fee ends of said tabs forming exposed actuator portions adjacent said indicia by which said tabs can be manually depressed to disengage said abutments from said articles;

a second elongated attachment strip disposed within said second groove and secured to said base; and

a plurality of drive fingers of generally Z-shaped profile integrally formed with said second attachment strip as a single plastic piece, each of said drive fingers extending upwardly into one of said slots, said drive fingers being biased for movement toward relaxed positions in which they extend toward said retaining members to eject said articles from said slots upon selective release of said articles by said abutments.

4,270,818

POWER WINDING PAPER TOWEL DISPENSER

Stanley G. McCabe, 4630 55th Dr. #185, Lubbock, Tex. 79414

Filed Apr. 2, 1979, Ser. No. 26,040

Int. Cl.[3] B65H *19/00*

U.S. Cl. 312—38 10 Claims

1. In a dispenser for roll paper toweling,

a cabinet having an upper clean towel compartment and a lower spent towel compartment separated from said clean towel compartment,

said cabinet also having front and rear walls and parallel side walls,

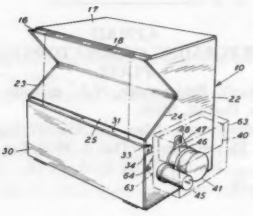
a slot at the upper front portion of said cabinet for the withdrawal of clean toweling from said clean towel compartment,

a slot spaced downwardly of said first slot for the insertion of spent toweling into said spent towel compartment,

a recess for substantial depth between said slots to accommodate the grasping of clean toweling by the hands to withdraw clean toweling from said clean towel compartment,

a spindle extending between said side walls across said spent towel compartment,

means accommodating the attachment of spent paper toweling onto said spindle,



a motor and a drive connection from said motor to said spindle,

an energizing circuit for said motor deenergized by tension on the paper and energized as the paper toweling is withdrawn from said first slot for use,

said energizing circuit including time delay switch means holding said motor from operation prior to winding spent toweling on said spindle for a time sufficient to accommodate drying of the spent paper toweling,

said time delay switch having a switch arm adjacent said second slot and engaged by the paper as long as there is tension on the paper sufficient to maintain the paper taut across said recess.

4,270,819

COLD DISPLAY CASE

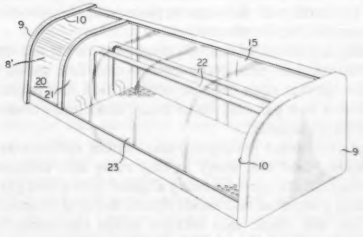
Morihei Ooho, 303-1, Ohaza Honjo, Yahata Nishi-ku, Kitakyushu, Fukuoka Prefecture, Japan

Filed May 16, 1979, Ser. No. 39,557

Claims priority, application Japan, Jul. 21, 1978, 53/101228[U]

Int. Cl.[3] **A47F** *3/04*

U.S. Cl. 312—116 **6 Claims**



1. A cold display case, wherein the frames thereof are constructed of steel pipes and connectors for assembling said pipes so that said frames can be easily and quickly constructed without necessitating other connecting means like welding;

wherein said pipes are generally rectangular and said connectors each have a main body and a plurality of engaging arms which engage said pipes and cross at right angles to each other;

and wherein said case comprises;

a bottom plate supporting frame,

a sliding glass door frame,

said frames being constructed with generally rectangular pipes and connectors, and said connectors each having a main body and a plurality of engaging arms crossing at right angles to each other,

packings attached along the upper surface of a front rectangular pipe of said bottom plate supporting frame and along the front surface of an upper rectangular pipe of said sliding glass door frame,

a curved glass plate supported by said packings by inserting the upper and lower ends thereof into grooves formed on said packings, and

side cover plates for covering the ends of both said glass plate and said frames, interposed packings between said cover plates on the one hand and said glass plate and said frames respectively on the other hand.

4,270,820

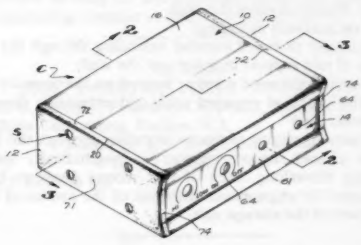
ELECTRIC COMPONENT CABINET

James P. McMullan, and Albert Stevens, both of 2630 Seaman Ave., El Monte, Calif. 91733

Filed Mar. 20, 1979, Ser. No. 22,192

Int. Cl.[3] **H02B** *1/00;* **A47B** *43/00*

U.S. Cl. 312—242 **5 Claims**



1. An elongate box-like cabinet for electrical devices comprising like vertically spaced longitudinally extending horizontal top and bottom walls, like longitudinally spaced vertical end walls and vertical, laterally spaced longitudinally extending front and rear panels, said like top and bottom walls have vertically spaced opposing inner surfaces with vertical inwardly projecting longitudinally extending front, rear and laterally spaced intermediate flanged projections, the flanged projections define longitudinally outwardly and vertically opening grooves, a pair of adjacent flanged projections on the top and bottom walls define horizontally opening and opposing longitudinal channels defining longitudinally outwardly and inwardly opening ways at the inner surfaces of the top and bottom walls, said vertical longitudinally extending front and rear panels have upper and lower edge portions slidably engaged in and retained by related opposing grooves in the front and rear flanged projections on the top and bottom walls, said like vertical end walls have longitudinally inwardly disposed inner surfaces in stopped engagement with opposing related ends of the top and bottom walls, longitudinally inwardly projecting retaining flanges engaged with the inner surfaces of said top and bottom walls and screw fasteners carried by the end walls and threadedly engaged into the ends of the grooves in said intermediate projections on said top and bottom walls, said intermediate flanged projections have inwardly disposed supporting edges to support parts arranged within the cabinets, said grooves in the intermediate flanged projections accommodate mounting parts and fastening means for parts arranged within the cabinet, said channels cooperatively receive mount-

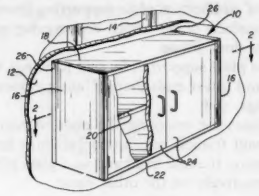
ing parts for electrical components and parts positioned within the cabinet between the projections.

4,270,821

CABINET AND SHELF WALL MOUNTING APPARATUS

Joseph T. Verdesca, 6504 Lobello Dr., Dallas, Tex. 75261

Filed Jul. 2, 1979, Ser. No. 53,944
Int. Cl.³ A47G *29/02*
U.S. Cl. 312—245 **7 Claims**



1. Apparatus for mounting a storage unit on a wall, said storage unit being provided with a plurality of apertured connectors, which comprises:

an elongate rigid support member having substantially flat front and rear sides;

a plurality of first fasteners extending through the wall and the rear side of said support member at longitudinally spaced intervals therealong for connecting said support member to the wall such that substantially the entire rear side thereof engages the wall;

said first fasteners including:

an externally threaded member extending through the rear side of said support member and the wall;

an internally threaded member located on the opposite side of the wall and engaged with said externally threaded member; and

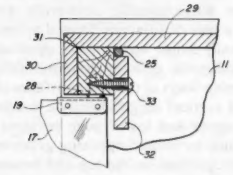
a plurality of second fasteners extending through the front side of said support member at longitudinally spaced points therealong, each of said second fasteners being adapted for engagement with one of the apertured connectors of the storage unit.

4,270,822

CABINET AND DOOR ASSEMBLY

Walter Gusdorf, Creve Coeur, Mo., assignor to Gusdorf Corporation, St. Louis, Mo.

Filed May 21, 1979, Ser. No. 40,504
Int. Cl.³ A47B *47/00*
U.S. Cl. 312—265 **2 Claims**



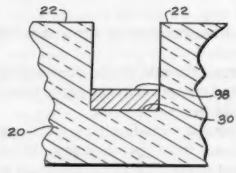
1. In a cabinet assembly the improvement of: spaced vertical side members; vertically spaced top and bottom horizontal shelf members extending between and separating said side members, said side and shelf members framing the open front of the cabinet assembly; a plurality of tension elements extending between said side members adjacent said bottom shelf member and also adjacent said top shelf member, said tension elements operatively drawing said vertical side members into assembly abutment with the shelf members; rail-forming means along the front of said spaced shelf members; hinge socket means carried by each of said rail-forming means so as to be in vertically spaced and aligned facing positions; closure means for the open front of the cabinet assembly; first hinge means on said closure means engageable in said socket means carried by said rail-forming means along the front of said bottom shelf member; second hinge means on said closure means in position to engage in said socket means carried by said rail-forming means along the front of said top shelf member, one of said tension elements being disposed adjacent said socket means carried by said rail-forming means for said top shelf member; and stop means adjacent said rail-forming means on said top shelf member in position to provide a portion thereof to position said closure means in closed position at the cabinet front and said stop means providing an abutment to engage said one tension element and block upward displacement of said top shelf member relative to said side members.

4,270,823

METHOD OF FORMING CONDUCTORS IN SLOTS IN A PLATE

Philip Kuznetzoff, Bridgewater, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 938,927, Sep. 1, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 81,000
Int. Cl.³ H01J *9/18, 17/16*
U.S. Cl. 316—19 **1 Claim**



1. A method of making a display panel comprising:

providing a glass support plate having a top surface and having a plurality of parallel slots formed in said top surface and varying in depth beneath said top surface,

completely filling all of said slots with the same filling material comprising a carrier medium including metal and glass frit particles,

permitting said metal and glass frit particles to settle through said medium to the bottom of each of said slots,

removing said medium to leave a film of metal and glass frit particles as an electrode at the base of each of said slots,

fusing said glass frit to fix said electrodes in place in said slots,

using the top surface of said plate as a guide, removing surface portions of said electrode so that the top surfaces of all of said electrodes become uniformly spaced below the top surface of the support plate, said electrodes comprising first anode electrodes,

mounting a plurality of cathode electrodes on the top surface of said support plate transverse to said first anode electrodes, so that each cathode crosses each first anode and defines a first gas cell, there being rows and columns of such first gas cells,

seating a cell sheet having top and bottom surfaces on said cathodes, said cell sheet having rows and columns of apertures, each aperture being aligned with a first gas cell,

providing a set of second anode electrodes on the top surface of said cell sheet, said second anode electrodes being disposed transverse to said cathode electrodes and defining rows and columns of second gas cells therewith,

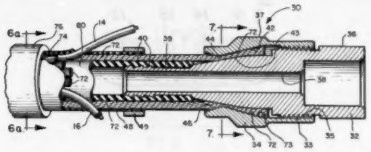
hermetically sealing a viewing face plate to said support plate to form an envelope enclosing said first and second anode electrodes, said cathode electrodes and said cell sheet, and

filling said envelope with an ionizable gas.

4,270,824
ELECTRICAL CLAMP

Milton W. Erickson, Crete, Ill., assignor to Dover Corporation, New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,569
Int. Cl.³ H01R *4/50*
U.S. Cl. 339—15 **16 Claims**



1. A clamp for securing the end section of an electrical cable, said clamp comprising:

an inner clamping member defining a tapered inner clamping surface;

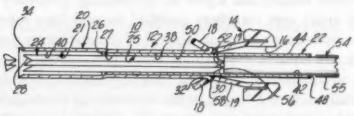
an annular outer clamping member defining a tapered outer clamping surface sized to telescope over the inner clamping surface, said outer clamping surface having a greater angle of convergence than said inner clamping surface; and

means for securing the inner clamping member to the outer clamping member such that the outer clamping surface is secured near the inner clamping surface to create an annular space therebetween for receiving and clamping the end section of an electrical cable, said annular space having a throat region and an end region wherein the end region is nearer the end of the cable than the throat region when the clamp is secured to the cable, and the annular space defines a smaller cross sectional area at the throat region than the end region.

4,270,825
ELECTRICAL CONNECTOR ASSEMBLY

Edward K. Marsh, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 9, 1979, Ser. No. 82,439
Int. Cl.³ H01R *4/10, 13/422*
U.S. Cl. 339—47 R **1 Claim**



1. An electrical connector assembly adapted for a mating with a second electrical connector assembly in terminating an electrically conducting body, the assembly comprising:

a housing having a housing passage formed therethrough;

an elongated body having an axial body passage extending completely therethrough between first and second ends, wherein the elongated body comprises an electrically conducting member and wherein the axial body passage includes first and second end portions that terminate in openings at the respective first and second ends of said body and an interior passage portion, the first end portion of said body passage having a cross-sectional area larger than the cross-sectional area of the interior passage portion, the first end of said electrically conducting member including a radially outwardly flared annular retaining flange;

an elongated electrically conductive member having an axial member passage extending completely therethrough, said axial member passage including first and second end portions and an interior passage portion medial the end portions thereof, the second end portion of the member passage terminating in an opening at the second end of said member, the second end portion of said member passage having a cross-sectional area greater than the cross-sectional area of the interior passage portion of said member, said member first end being axially aligned and axially mounted within the axial body passage of the body so that said member second end extends beyond the second end of said elongated body and into said housing passage;

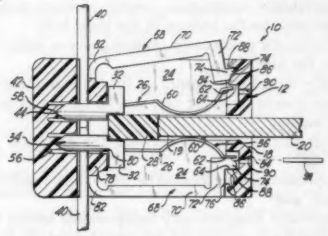
several electrical conducting wires axially aligned and axially mounted within the first end portion of the member passage, each of said wires including an end portion which terminates in an acutely angled surface, the ends of the wires being disposed at a position medially the second portion and the interior passage portion for engagement by the electrically conducting body, wherein a second end portion of said member passage is adapted to receive the electrically conducting body therein for engaging the ends of said wires in electrical circuit relationship, said wires being mounted in said interior passage portion of said first member being a pair of axially spaced crimp joints of said first member, said second member and said first member being connected to said wires in electric relationship at the crimp joints; and

retaining means coupled to said housing for releasably securing said contact within said housing passage, said retaining means securing the contact within the housing passage at said retaining flange and including at least one radially deflectable contact retaining finger integrally connected to said housing for abuttingly engaging said electrically conducting member at said retaining flange.

4,270,826
ZERO INSERTION FORCE CONNECTOR

Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Feb. 1, 1979, Ser. No. 8,544
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 MP **18 Claims**



1. A zero insertion force type connector for receiving a printed circuit board or the like and making selective electrical contact with the electrical circuitry thereon, said connector comprising:

a housing having one side thereof with an opening for insertion of the printed circuit board therein;

a plurality of individual conductors supported within said housing, each of said individual conductors being movable between a contact position in which said conductor is adapted to engage an associated contact portion on said printed circuit board, and a noncontact position in which said conductor is spaced from said printed circuit board when said printed circuit board is in the housing, said individual conductors being biased toward said noncontact position so that the printed circuit board may be inserted into said housing with a minimal force;

a corresponding individual selectively operable actuator member for each of said individual conductors, each of

said actuator members being independently movable in any desired sequence between a first position in which said actuator member is restrained from movement and urges its corresponding conductor into its said contact position and a second position in which its corresponding conductor is free to assume its said noncontact position, each said actuator member being biased toward said second position; and

release means for each said actuator member in said first position permitting release of such movement restraint and enabling biased movement individually of each said actuator member to said second position thereof.

4,270,827

BATTERY CABLE CONNECTOR

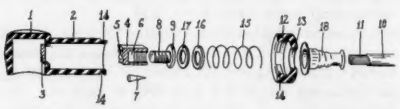
Maurice S. Potgieter, 8122 E. 65th St., Tulsa, Okla. 74133

Filed Mar. 7, 1979, Ser. No. 18,236

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 7807069[U]

Int. Cl.³ H01R *4/54, 11/20, 11/24*

U.S. Cl. 339—95 B **5 Claims**



1. A battery cable connector for motor vehicle batteries having substantially cylindrical connecting lugs comprising,

a cap of electrically insulating material for the lug,

a radial sleeve-like extension piece projecting from the cap in communication through a noncircular aperture with the interior of the cap,

an electrical contact piece of complementary shape to the aperture and having a toothed contact surface for engagement with the lug,

a blind threaded hole in the end of the contact piece opposite the contact surface,

an electrically conductive conical element with its base supported by the bottom of the blind hole,

an electrically conductive clamping sleeve screw threaded into the blind hole,

an easily detachable closure lid for the end of the extension piece remote from the cap, said lid having an opening for the cable,

bayonet joint formations between the extension piece and the lid,

a compression spring located between the lid and the contact piece, and

an elastically longitudinally compressible socket extending outwardly from the lid to extend over the cable, said socket being so formed that its end distal from the lid does not grip the cable too tightly so that the socket can be pushed together elastically in the direction of the lid.

4,270,828

IMPROVED CAPACITOR LEAD CLIPS

George T. Thurston, Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,848

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—95 R **10 Claims**

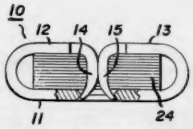
1. A clip type connector adapted to connect a plurality of electrical conductor laminae together comprising,

(a) a metal strip having a central aperture therethrough,

(b) said strip having at its opposite ends formed with piercing tang members projecting therefrom,

(c) said strip having opposite end portions thereof folded upwardly as upstanding arm members which provide a generally triangular configuration to define a base member having said central aperture therein,

(d) said piercing tang members being folded inwardly towards said aperture in said base member and abutting each other to form a V section,



(e) whereby when a plurality of conductor laminae are inserted into said triangular configuration a crimping tool forces said piercing tangs through said laminae and said aperture to be clinched to said member.

4,270,829

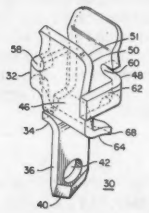
JUMPER SOCKET

Albert H. Wilson, Los Angeles, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Aug. 28, 1979, Ser. No. 70,436

Int. Cl.³ H01R *13/115*

U.S. Cl. 339—96 **9 Claims**



1. A circuit board socket comprising in combination: a base member; a tail member coupled to said base member for engagement with the defining walls of a plated-through aperture in a circuit board; and a pair of upstanding, generally parallel spaced apart arm members coupled to said base member for receipt therebetween of an electrical conductor to provide an electrically continuous path between such electrical conductor and a circuit board, said arm members having first free ends outwardly directed to aid in the insertion of an electrical conductor between said arm members, second free ends of said arm members being inwardly directed to engage one another to limit any separation of said arm members as an electrical conductor is inserted therebetween, said arm members being inwardly directed intermediate said ends thereof to provide a restriction to limit the withdrawl of an electrical conductor inserted therebetween.

4,270,830

WIRE CONNECTOR

Stanley Brenner, Massapequa, N.Y., assignor to Perfect-Line Manufacturing Corp., Lindenhurst, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,289

Int. Cl.³ H01R *11/20;* **E04G** *7/08*

U.S. Cl. 339—99 R **1 Claim**

1. A wire connector comprising:

a body member having a lower hollow internally threaded portion and an upper portion,

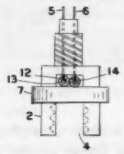
a slot in said lower portion,

a pair of spaced electrodes mounted in said upper portion,

the lower ends of said electrodes being pointed and extending into the area of said slot,

a ring member having a central portion bridging the ring member, said ring member being slidably mounted on the lower portion of said body member,

an externally threaded member threadedly connected to the internally threaded hollow portion of said body member,



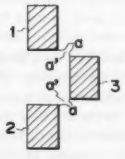
whereby an insulated two conductor cable may be inserted through said slot between the lower ends of said electrodes and said ring member and the externally threaded member may be screwed into the body member to force the electrode points through the insulation of said cable and causing each electrode point into contact with one of the conductors of said cable.

4,270,831

ELECTRIC TERMINAL FOR PRESS-IN CONNECTION WITH CONDUCTORS

Toru Takahashi, Yokohama, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,371
Claims priority, application Japan, Oct. 19, 1978, 53-127870
Int. Cl.[3] H01R *4/24*
U.S. Cl. 339—99 R **7 Claims**



1. An electrical connector for press-in connection with a conductor, said connector comprising:

a base;

a first rectangular tine, a second rectangular tine and a third rectangular tine, each extending upward from said base, said first rectangular tine and said second rectangular tine located adjacent and spaced sideways from each other and said third rectangular tine located displaced laterally away from a line which extends between said first and second rectangular tines and adjacent the center of the space between said first and second rectangular tines, the front surfaces of said first and second rectangular tines facing in the direction in which said third rectangular tine is laterally displaced and opposite the direction of facing of the front surface of said third rectangular tine, and said first, second and third rectangular tines positioned so that the side surfaces of said first and third rectangular tines, which are closest each other, define an x_1 axis, the side surfaces of said third and second rectangular tines, which are closest each other, define an x_2 axis which is parallel to said x_1 axis, and the front surfaces of said first, second and third rectangular tines are aligned to define a y axis which is perpendicular, in the same plane, to said x_1 and x_2 axes;

a first bevel surface on said first rectangular tine at the corner closest said third rectangular tine, a third bevel surface on said third rectangular tine at the corner closest said first rectangular tine, said first and third bevel surfaces being spaced from and facing each other for defining a first space for receiving a conductor therein;

a second bevel surface on said second rectangular tine at the corner closest said third rectangular tine, a fourth bevel surface on said third rectangular tine at the corner closest and said second rectangular tine, said second and fourth bevel surfaces being spaced from and facing each other for defining a second space for receiving a conductor therein; and

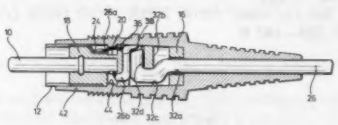
whereby a conductor can be inserted into said first and second spaces between said bevel surfaces for establishing a physical and electrical connection between said terminal and the conductor through direct contact between the conductor and said bevel surfaces.

4,270,832

PIN PLUG

Shigeru Tanabe, No. 3-10-15, Kita-Koiwa, Edogawa-ku, Tokyo, Japan

Filed Apr. 25, 1979, Ser. No. 33,315
Claims priority, application Japan, Oct. 23, 1978, 53/145688[U]
Int. Cl.[3] H01R *13/58*
U.S. Cl. 339—105 **5 Claims**



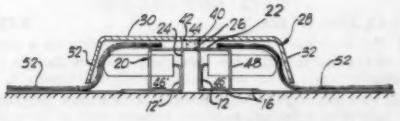
1. A pin plug for attachment to the lead wire of a connecting cord comprising a bar electrode and a cap electrode and a base for holding said bar electrode and said cap electrode coaxially and insulatedly from each other and a flexible sleeve for coating said base, said base including a head section for supporting said cap and bar electrodes and a body section provided in its circumference with at least one continuous groove for receiving the lead wires of a connecting cord, said continuous groove comprising at least three tandemly arranged groove portions, at least one of said groove portions extending axially and one of said groove portions extending radially of said base, said axial and radial groove portions alternating with each other, said base being formed with an annular space between said head and body sections for connection of one of said lead wires to said cap electrode and a stem portion coupling said head and body sections, and through which said bar electrode extends for connection of the other lead wire and at least one hole in communication with the last radial groove for passing the lead wire to said stem portion to be connected to the bar electrode.

4,270,833

REINFORCED ELECTRICAL CONNECTOR JUNCTION MEANS

Glenn E. Storck, Long Valley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,535
Int. Cl.[3] H02G *3/08*; H01R *13/60*
U.S. Cl. 339—121 **7 Claims**



1. Electrical connector junction means for use with flat

conductor cable lying along a floor, said electrical connector junction means comprising:

a base having a substantially flat support surface for mounting of said base on a floor adjacent a flat conductor cable;

a housing for said base, said housing having an upper wall and depending side walls defining an interior space above said base for receiving the flat conductor cable and a second conductor for electrical connection together; and

a central upstanding reinforcing supporting member affixed to and extending upwardly above the center of said base, said reinforcing supporting member comprising a longitudinally extending rib and a pair of spaced laterally extending arms interconnected by said longitudinally extending rib for supporting said upper wall of said housing when said housing is positioned over said base and said supporting member.

4,270,834

ELECTRIC CONTACT FOR A BATTERY-OPERATED INSTRUMENT

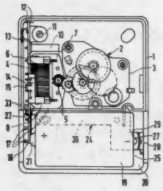
Robert Wolber, and Roland Maurer, both of Lauterbach, Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,590

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 7827030[U]

Int. Cl.³ G04C *10/00;* **H01R** *13/50;* **H05K** *1/11*

U.S. Cl. 339—147 R **9 Claims**



1. A contact arrangement for a battery-operated instrument of the type comprising a plastic housing having a battery-receiving recess and a first support rib, and a circuit board insertable within said housing, said contact arrangement comprising a bus portion having at one end a first resilient leg for engagement with one terminal of a battery seated within the recess and at another end a second leg having a knife-edge in contact with a circuit path on said circuit board, said circuit board being disposed between said legs such that said second leg engages said circuit path on a side of said circuit board opposite said first leg and presses against said circuit board in a direction parallel to and opposite the direction in which said first leg presses against said one battery terminal, and urges said circuit board into supportive engagement with said first support rib of said housing.

4,270,835

RAIL-MOUNTED ELECTRICAL TERMINALS

Hans-Herbert Kordt, Osterode, and Paul P. Stenz, Detmold, both of Fed. Rep. of Germany, assignors to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,700

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 7822789[U]; Oct. 19, 1978, 2845532

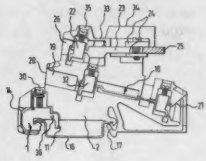
Int. Cl.³ H01R *4/66, 9/22*

U.S. Cl. 339—198 GA **8 Claims**

1. An electrical terminal block for mounting on a support rail of channel section with outwardly directed flanges, comprising

(a) an insulating housing provided with means for gripping one of said flanges; and

(b) electrical terminals in said housing including an earth terminal provided with a first member arranged to engage under the other of said flanges of said support rail with a second member arranged to engage an internal side surface of the channel-section support rail adjacent to said



other flange, and with a clamping screw arranged to clamp the said other flange against the said first member and to clamp an earth conductor in the earth terminal.

4,270,836

HOLDER FOR ELECTRICAL COMPONENT

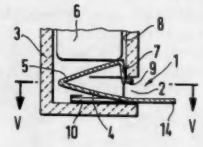
Manfred Adam, Witten, Fed. Rep. of Germany, assignor to Wickmann-Werke AG, Witten, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,027

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825317

Int. Cl.³ H01R *13/432*

U.S. Cl. 339—213 R **14 Claims**



1. In a holder for holding an electrical component of the type having a socket-like housing of electrically insulating material adapted to be closed at its top end by a cap and having a springy foot-contact in the bottom thereof, the improvement wherein said foot-contact comprises a one-piece sheet metal tongue having two slits running in the longitudinal direction thereof dividing said tongue into a central arm and two legs one on either side of said central arm, and having a bent back springy contact arm connected to said central arm, and said housing has means defining an opening therein, said foot-contact being so constructed that, with said contact arm resiliently compressed toward said central arm, said foot-contact can be inserted into said housing through said opening and secured in said housing by said contact arm springing back away from said central arm.

4,270,837

PERISCOPIC VIEWFINDER SYSTEM FOR USE IN PHOTOGRAPHIC CAMERAS

James G. Baker, Bedford, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 2, 1979, Ser. No. 26,086

Int. Cl.³ G03B *13/02*

U.S. Cl. 350—54 **14 Claims**

1. An afocal, elongated viewfinder optical system for use in a photographic camera to provide a final erect image of a scene at an accessible exit pupil, said viewfinder system comprising:

a first pair of equi-convex, aspheric lens elements structured to provide both an objective lens function and a field lens function;

a second pair of equi-convex aspheric lens elements also structured to provide both an objective lens function and a field lens function, the second lens element of said first

pair of equi-convex lens elements being spaced from the first lens element of said second pair of equi-convex lens elements by a predetermined distance;

a central aperture stop located between said first and second pairs of equi-convex lens elements;

a first negative lens element associated with said second element of said first pair of equi-convex lens elements and structured so that the net focal length of the combination of said first negative lens element and said second element of said first pair of equi-convex lens elements is increased, said first pair of equi-convex lens elements in combination with said first negative lens element operating to provide an image of said central aperture stop in object space, said central aperture stop image defining the entrance pupil to said viewfinder system;

a second negative lens element associated with the first element of said second pair of equi-convex lens elements and structured so that the net focal length of the combination of said second negative lens element and said first lens element of said second pair of equi-convex lens elements is increased, said second pair of equi-convex lens elements in combination with said second negative lens element operating to provide an image of said central aperture stop in image space which image defines the exit pupil of said viewfinder system; and

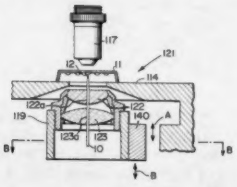
central positive lens means located adjacent said central aperture stop and structured to reimage image bearing rays over said predetermined distance separating said first and second pairs of equi-convex lens elements, the focal length of said central positive lens means exceeding one-fourth said predetermined distance separating said first and second pairs of equi-convex lens elements, said first and second negative lens elements, and said positive lens means being further structured to optically cooperate to provide the final erect scene image at said exit pupil of said viewfinder system.

4,270,838

MICROMANIPULATOR FOR A MICROSCOPE

Mitsuru Furusawa, Nishinomiya; Fumiichiro Yamamoto, Osaka, and Makoto Yoshinaga, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,715
Claims priority, application Japan, Jun. 5, 1978, 53/67461
Int. Cl.³ G02B *21/32*
U.S. Cl. 350—81 **5 Claims**



1. Apparatus including a microscope and a micromanipulator mounted thereon, comprising:

a microscope including an objective lens having an optical axis;

said microscope including a movable member mounted on said microscope for movement in the direction of said optical axis;

said movable member including a lens;

a miniature operating tool; and

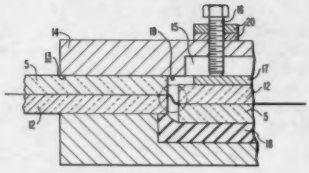
said miniature operating tool being mounted on the lens of said movable member for movement in the direction of said optical axis.

4,270,839

DIRECTIONAL OPTICAL FIBER SIGNAL TAPPING ASSEMBLY

Michael A. Cross, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1979, Ser. No. 7,460
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.15 **2 Claims**



1. A directional optical fiber signal tapping assembly comprising:

(a) first and second light pipes each including a groove;

(b) an optical fiber positioned in the grooves in said light pipes;

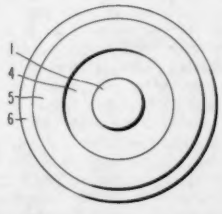
(c) a support member having a first opening therein with said first light pipe being fixed rigidly in said opening, said support member also having a second opening therein with positioning means supporting said second light pipe in said second opening such that said light pipes can be selectively displaced from each other in a longitudinal direction thereby selectively bending said optical fiber thereby changing the amount of light which is coupled into said light pipes due to leakage from said optical fiber.

4,270,840

GLASS FIBERS FOR OPTICAL TRANSMISSION

Naoya Uchida, Mito; Shigeyuki Seikai, Nishi; Kozo Yoshimura, and Toru Yamanishi, both of Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed May 25, 1979, Ser. No. 42,649
Claims priority, application Japan, May 25, 1978, 53-63158
Int. Cl.³ D02G *3/00;* G02B *5/14*
U.S. Cl. 350—96.34 **13 Claims**



1. A reinforced glass fiber for use in optical transmission comprising an optical fiber having provided thereon (1) a coating of a first curable organopolysiloxane composition having a refractive index higher than the glass which forms the outermost layer of the glass fiber, said first curable organo-

polysiloxane composition being baked to cure the same, and (2) a coating of a second organopolysiloxane composition which can be the same as or different from the first curable organopolysiloxane composition, said second curable organopolysiloxane composition then being provided on the first curable organopolysiloxane and being baked to cure the same, wherein at least one of the first and second curable organopolysiloxane compositions has a stress absorbing effect and a Young's modulus lower than 2.0 kg/mm^2 at room temperature.

4,270,841

LIGHT VALVE CONTAINING SUSPENSION OF PERHALIDE OF ALKALOID ACID SALT

Robert L. Saxe, New York, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,418

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.^{3} G02F *1/01*

U.S. Cl. 350—374 **12 Claims**

1. In a light valve, comprising a cell containing a suspension of light-polarizing particles in a liquid suspending medium, the improvement wherein said light polarizing particles are particles of a light-polarizing perhalide of a polycarboxylic acid salt of an alkaloid.

4,270,842

OPTICAL SYSTEM FOR FORMING AN IMAGE OF THE RETINA

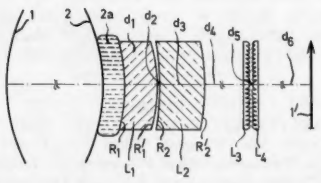
Franz Muchel, Königsbronn, and Werner Böhning, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl Zeiss Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Apr. 12, 1978, Ser. No. 895,689

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716614

Int. Cl.^{3} G02B *3/08*; A61B *3/10*

U.S. Cl. 350—452 **1 Claim**



1. An optical system for forming an image of the retina of an eye, comprising a first lens group and a second lens group, the two groups cooperating with each other to form the image, the first lens group being substantially in contact with the eye to be examined through an interposed liquid film, the second lens group being separated from the first group by an air space and being dimensioned to conjugate the pupil of the eye being examined with the pupil of the eye of the observer, wherein the lenses of the first group and the second group have substantially the characteristics and relationship to each other indicated by the data in the following table, in which individual lenses are indicated by L with a numerical subscript corresponding to the consecutive number of the lens as numbered from front to rear, the radii of curvature of the front and rear surface of each lens are indicated by R and R', respectively, with a numerical subscript corresponding to the number of the lens, the vertex thicknesses of lenses and spaces between lenses are indicated by d with a numerical subscript corresponding to the numbering of the thicknesses and spacings in a single numerical series, the focal length of the Fresnel lenses L_3 and L_4 is indicated by f, all linear dimensions being expressed in millimeters, the index of refraction of certain of the lenses is given in the column headed n_d, and the index of dispersion or Abbe number of certain of the lenses, expressed with respect to the yellow d-line of the helium spectrum with a wavelength of 5876 Angstrom units, is given in the column headed v_d:

Lens	Radii	Vertex thicknesses and spacings	n_d	v_d
	R_1 = 7,8298 mm			
		d_1 = 1,50 mm	1.52249	59.48
L_1	R_1' = 6,9783 mm			
		d_2 = 0,05 mm		
	R_2 = 12,785 mm			
		d_3 = 2,00 mm	1.73350	51.65
L_2	R_2' = 10,100 mm			
		d_4 = 21,8 mm		
		d_5 = 0,1 mm		
		d_6 = 7 mm		
L_3				
	(Fresnel) f = 55 mm			
L_4				

4,270,843

OBJECTIVE FOR VIDEO DISKS

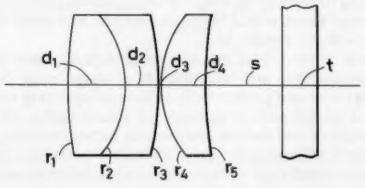
Atsuo Goto, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,411

Claims priority, application Japan, Jun. 26, 1978, 53/77220

Int. Cl.^{3} G02B *9/06*

U.S. Cl. 350—480 **5 Claims**



1. An objective for video disks comprising a first and second lens components, said first lens component being a positive cemented oublet consisting of a positive lens and negative lens, said second lens component bieng a positive meniscus lens arranged concave toward the image side, said objective for video disks satisfying the following conditions:

(1) $-1.46/f < n_2/n_1 \cdot 1/r_2 < -1.1/f$

(2) $1.7f < (n_3 - 1)r_5 < 2.4f$

wherein reference symbol r_2 represents the radius of curvature of the cemented surface of the first lens component, reference symbol r_5 represents the radius of curvature of the surface on the image side of the second lens component, reference symbols n_1, n_2 and n_3 respectively represent refractive indices of respective lenses at the wavelength of 632.8 nm, and reference symbol f represents the focal length of the lens system as a whole.

4,270,844

OMNI-DIRECTIONAL COMPOUND PARABOLOID-HYPERBOLOID RADIATION DEVICE

Milan H. Cobble, 2019 Crescent Dr.; Wendell C. Hull, 1860 Myrtle St., and Richard A. Hays, 3006 Devondale, all of Las Cruces, N. Mex. 88001

Filed Oct. 9, 1979, Ser. No. 83,046

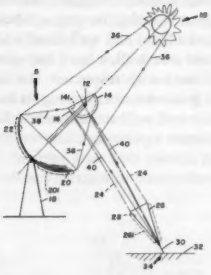
Int. Cl.^{3} G02B *5/10, 17/06*

U.S. Cl. 350—294 **10 Claims**

1. An omni-directional compound paraboloid-hyperboloid radiation device, comprising:

a paraboloid having an internal reflecting surface for tracking a source of radiation; and

a hyperboloid having an external reflecting surface, said hyperboloid being movably mounted with respect to said



paraboloid reflecting surface for redirecting the radiation reflected from said internal reflecting surface of said paraboloid to a location remote from said paraboloid and concentrating the reflected radiation at said remote location.

4,270,845

LASER APPAPATUS FOR OPERATIONS

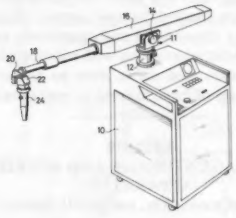
Toshiaki Takizawa, Tokyo; Kazumasa Takeuchi, Chofu, and Takashi Togo, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1976, Ser. No. 703,744

Claims priority, application Japan, Jan. 7, 1976, 51-947; Jan. 12, 1976, 51-2123

Int. Cl.³ G02B *5/08*

U.S. Cl. 350—299 **20 Claims**



1. A laser apparatus for operations comprising a power case containing a power supply, a laser tube container head mounted directly on and located over the power case, means for supporting the laser tube container head in a manner to enable seesaw motion in a vertical plane about a horizontal axis, a longitudinally telescoping light guide device attached to the laser tube container head, the light guide device being movable between fully extended and fully retracted positions, mirror joints connected with the light guide device and a manipulator connected with the mirror joints, the laser tube container head being supported by means located at the center of gravity thereof when the light guide device is in the fully extended position whereby when the light guide device is in the fully retracted position the means for supporting the laser tube container head will act as a fulcrum and there will be a downward force exerted by the laser tube container head on the side of the means for supporting the laser tube container head that is remote from the manipulator such that the manipulator with the light guide device will always tend to move in an upwardly direction and will tend to remain in the elevated position absent a force being applied thereto in the downward direction.

4,270,846

ELECTRO-OPTICAL DISPLAY DEVICE

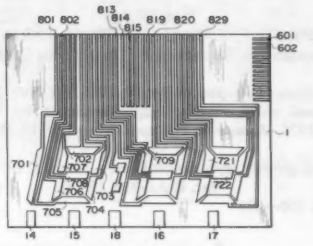
Masao Miyamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Deini Seikosha, Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 971,824

Claims priority, application Japan, Dec. 26, 1977, 52-159152

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—336 **13 Claims**



1. In an electro-optical display device comprising a transparent first substrate having a transparent first electrode, a second substrate having a second electrode, and an electro-optical material sandwiched between the first and second electrodes; the improvement wherein one of said first and second electrodes comprises a segment display electrode part having a plurality of 7-segment digits each of which forms the figure 8, and a dot matrix display electrode part having many parallel linear electrodes, at least a part of the leads of said 7-segment digits comprising at least some of said dot matrix display electrodes; and wherein the other of said first and second electrodes comprises a counter electrode part corresponding to said segment display electrode part, and another counter electrode part having many parallel linear electrode perpendicularly intersecting said parallel linear electrodes of said dot matrix display electrode part; both the segment display and the dot matrix display being arranged for multiplex drive.

4,270,847

ELECTRO-OPTICAL LIGHT MODULATION ELEMENT

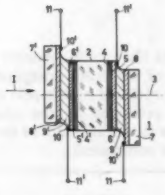
Herbert Meyer, Quickborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,180

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903838

Int. Cl.³ G02F *1/03*

U.S. Cl. 350—392 **12 Claims**



1. An electro-optical light modulation element comprising:

an electro-optical crystal having at least two flat sides, said sides being substantially parallel to each other;

two intermediate layers, each layer being transparent to the light to be modulated, one layer being provided on each flat side; and

two first electrodes, each electrode being transparent to the

light to be modulated, one such electrode being disposed on each transparent intermediate layer;

characterized in that the element further comprises:

two layers of cement, each layer of cement being transparent to the light to be modulated, one cement layer being provided on each first electrode; and

two second electrodes, each second electrode being transparent to the light to be modulated, one second electrode being provided on each cement layer, each of said second electrodes having an electrical conductivity which is greater than that of each of the first electrodes for equal transparencies of the electrodes.

4,270,848

IMAGE ENLARGING OPTICAL VARIATOR

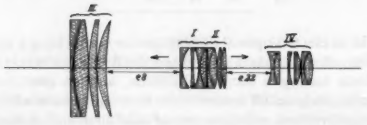
Pierre Angenieux, 31, chemin des Hauts Crets, Geneva, Switzerland

Continuation-in-part of Ser. No. 856,084, Nov. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 730,712, Oct. 8, 1976, abandoned. This application Oct. 17, 1978, Ser. No. 952,061

Claims priority, application France, Nov. 21, 1975, 75 35613

Int. Cl.³ G02B *15/18*

U.S. Cl. 350—427 **27 Claims**



1. An optical image enlarging variator comprising two coaxial components and adapted, from a fixed virtual image disposed at the rear of the front component, to give a fixed real image located behind the rear component, the magnification varying as a function of the relative position of the two components, wherein:

said two components are movable in relation to each other and to the fixed position of the diaphragm;

and the front component, which is divergent, comprises four lenses, namely in the front to rear direction: a first negative power meniscus having its convexity directed towards the front, a second negative power lens, third and fourth lenses cemented to constitute a doublet in which the front lens is biconcave and the rear lens is a positive power lens;

the rear component comprises four lenses and has at its front end a compound lens, said compound lens including a negative element, and wherein the rear component includes positive lenses located behind said compound lens;

the two components have a relative position in which $g1=g2=G=1$ and, irrespective of the relative positions of said components, the following requirements are met:

$$0.20<g1<1.60$$

$$0.25<g2<1.50$$

as well as requirement $f2/f1<1.2$, wherein g1 designates the image magnification of the front component, g2 being the image magnification produced by the rear component, G the image magnification produced by the complete device, f1 being in absolute value the focal length of the front component and f2 that of the rear component.

4,270,849

ROTARY VALVE ACTUATOR CONSTRUCTION

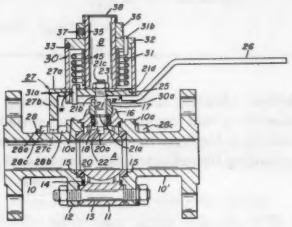
Adolphe W. Kalbfleisch, P.O. Box 64, Jeannette, Pa. 15644

Filed Apr. 12, 1979, Ser. No. 29,319

Int. Cl.³ F16K *31/00*

U.S. Cl. 251—292 **5 Claims**

1. In a valve actuator construction for a rotative valve unit having a housing whose wall defines a fluid flow passageway therethrough, having a boss open through the wall of the valve housing, and having an operating stem adapted to latch-engage within the ball valve and extend outwardly through the boss for rotating the valve within the passageway, the improvement which comprises: an actuator housing adapted to be secured in an endwise-extending and spaced-apart relation on the valve housing, said actuator housing having a tubular endwise extending side wall and a front end wall fixedly secured to close-off a front end of said side wall, a back end closure wall member rotatably positioned with respect to the back end of said side wall, a tubular guide member having its back end secured to said rotatable back end wall and extending forwardly therefrom in a spaced-apart operating-chamber-defining relation with respect to said tubular side wall, said tubular guide member at its forward end extending rotatably within said front end



wall for rotation with said back end wall and with respect to said side wall, convoluted spring means operatively positioned in a spaced relation within and along said operating chamber between said side wall and said tubular guide member and at its back end being secured to said rotatable back end wall and at its front end being secured to said fixed end wall for resisting turning movement of the valve stem in one direction, operating means connected to said rotatable back end wall for rotating it and said tubular guide member with respect to said actuator housing for turning the valve stem to a valve operating position against tension exerted by said spring means, and said spring means being constructed and operatively positioned to smoothly and without interferring with rotation of said tubular guide member return said valve stem to an initial starting position upon release of force exerted by said operating means.

4,270,850

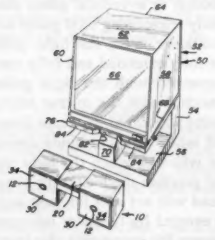
MICROIMAGE STORAGE AND RETRIEVAL APPARATUS

Arnis E. Peters, LaCrosse, Wis., assignor to Realist, Inc., Menomonee Falls, Wis.

Continuation of Ser. No. 861,523, Dec. 19, 1977, Pat. No. 4,203,658. This application Aug. 3, 1979, Ser. No. 63,247

Int. Cl.³ G03B *23/08, 21/11*

U.S. Cl. 353—27 R **4 Claims**



1. In a viewer of microimages arranged upon an elongated filmstrip in columns along the length of the filmstrip and in

rows transverse to said columns, wherein the viewer includes a source of illumination, means for projecting the illumination along an optical axis that intersects the filmstrip, and then projects an illuminated image from the filmstrip, enlarges same, and displays the enlarged image upon a viewing screen; the improvement comprising, in combination:

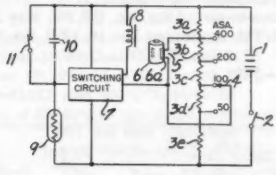
a support base; a viewing module that includes said viewing screen, means mounting said module in spaced relation from said support base to define a recess between said module and base; an enclosure on said base spaced from and below said viewing module to define an elongated passageway between said enclosure and the viewing module; track means on the module; a carriage suspended and supported from and movable manually along said track means, within said elongated passageway; a filmstrip-carrying, U-shaped cassette with a light transmitting bight portion supported from the carriage with said bight portion of the cassette movable in said elongated passageway; illuminating means in said enclosure projecting light along an optical axis that projects through the bight portion of the cassette and to enter the viewing module; motor means on the carriage for selectively moving the film within the cassette in directions transverse to said optical axis and parallel to the columns of microimages on the filmstrip; and the cassette and carriage being constructed to be selectively manually movable along said track means, even simultaneously with motorized movement of film within said cassette in directions parallel to columns of microimages, for moving the cassette with film therein transverse to the optical axis and parallel to the rows of microimages on the filmstrip.

4,270,851

AUTOMATIC FILM SENSITIVITY SETTING SYSTEM FOR CAMERA

Yuzuru Takazawa, and Shinji Nagaoka, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 50,127
Claims priority, application Japan, Jul. 18, 1978, 53-98983[U]
Int. Cl.³ G03B *7/83*
U.S. Cl. 354—21 **9 Claims**



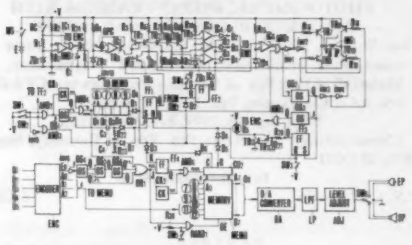
1. In a camera exposure control circuit of the type including a switching circuit responsive to an electrical brightness signal representative of the brightness of a subject to be photographed and responsive to an input trigger signal for controlling exposure according to the brightness signal and the trigger signal, and trigger signal generating means for generating the trigger signal and for applying the trigger signal to the switching circuit, the improvement comprising: said trigger signal generating means comprising first means manually operable for selecting the value of the trigger signal generated by said trigger signal generating means; and said trigger signal generating means comprising second means cooperative with a camera film holder for setting the value of the trigger signal generated by said trigger signal generating means to a predetermined value, and said second means being effective to render said first means inoperative when said second means cooperates with a film holder to determine the value of the trigger signal.

4,270,852

SOUND DEVICE INCORPORATED CAMERA

Ryoichi Suzuki, Kawasaki; Isao Harigaya, and Takashi Uchiyama, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,821
Claims priority, application Japan, Feb. 9, 1978, 53-14336; Feb. 16, 1978, 53-17215
Int. Cl.³ G03B *17/18, 29/00;* G08B *3/10, 23/00*
U.S. Cl. 354—23 D **10 Claims**



1. A photographic camera comprising:

(a) warning signal source means for generating a first warning signal indicating an abnormal exposure value, and a second warning signal indicating an abnormal condition of a power source circuit;

(b) priority means connected to the warning signal source means to generate an electrical signal corresponding to the warning signals applied from the warning signal source means, said priority means being designed to generate preferentially the second warning signal when the two warning signals are simultaneously generated from the warning signal source means; and

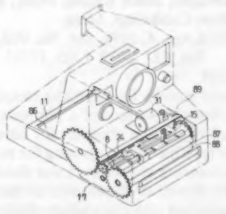
(c) sound producing means functionally connected to the priority means for converting the electrical signal from the priority means to an audible signal.

4,270,853

SOUND-RECORDING INSTANT-PRINTING FILM AND CAMERA THEREFOR

Kotaro Hatada; Masaru Higuchi, both of Toyonaka, and Hiroshi Iwata, Ikoma, all of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Mar. 21, 1979, Ser. No. 22,930
Int. Cl.³ G03B *29/00*
U.S. Cl. 354—76 **16 Claims**



1. In combination:

an instant-printing film including:

a surface layer,

a back sheet,

a photo-sensitive emulsion layer in between said surface layer and said back sheet,

a frame surrounding the periphery of said surface layer, back sheet and photo-sensitive emulsion layer,

a bag of developing solution disposed on a part of said frame, and

a magnetic recording band disposed on at least one side of said frame of said instant-printing film; and

a film pack case adapted to receive said film and to be disposed in an instant-printing camera said case including means defining a recording opening through which a magnetic head may touch said recording band.

4,270,854

PHOTOGRAPHIC INSTANT CAMERA WITH MAGNETIC RECORDING CAPABILITY

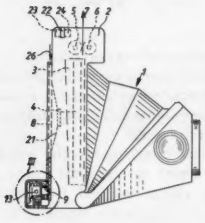
Otto Stemme, Munich; Frank Staudacher, Haan; Peter Lermann, Post Feldkirchen, and Eduard Wagensonner, Aschheim, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,121

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840051

Int. Cl.³ G03B *29/00*

U.S. Cl. 354—76 **5 Claims**



1. In a photographic instant camera, a combination comprising a housing adapted to hold a film pack composed of a plurality of self-developing film sheets each having a margin provided with a magnetizable portion, said housing including a wall provided with a slot into which only said margin is insertable; magnetic recording means in said housing and including a magnetic recording head mounted for movement along said slot and a film sheet margin inserted therethrough, for magnetically recording information onto said magnetizable portion of the respective film sheet; and amplifier means for transmitting electrical signals to the movably mounted magnetic recording head.

4,270,855

CAMERA FOR TAKING MULTIPLE EXPOSURES ON A SINGLE SHEET OF FILM

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 4, 1978, Ser. No. 893,487

Int. Cl.³ G03B *1/00, 17/52*

U.S. Cl. 354—124 **18 Claims**

1. A hand held camera for exposing successive portions of the same light sensitive surface of a film unit, comprising:

means for defining a film chamber for receiving a film cassette of the type having an opening for receiving a portion of a film advancing apparatus, a slot through which a film unit may be moved to the exterior of the film cassette, an exposure aperture and containing within the film cassette at least one film unit which is adapted to be aligned with the exposure aperture;

means for positioning the film cassette at a first location within said film chamber such that a first predetermined area of the film unit is located in position for exposure;

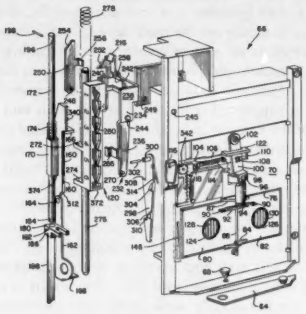
means for releasably retaining said positioning means at said first location;

an exposure system for exposing the first predetermined area of the film unit;

means for actuating said exposure system so as to expose at least a portion of the first predetermined area;

means, responsive to the manual operation of said actuating means which completes the exposure of the first predetermined area, for automatically moving said retaining means to a position wherein said positioning means automatically moves the film cassette to a second location within said film chamber so as to locate a second predetermined area of the film unit in position for exposure;

film advancing means adapted to extend into the opening in



the film cassette and engage the film unit subsequent to the last portion of the film unit being exposed and move it at least partially through the slot in the film cassette;

manually operative means coupled to said film advancing means for driving the latter so as to move the film unit at least partially through the slot; and

means for rendering said manually operative means inoperative to drive said film advancing means until the last portion of the film unit has been exposed whereby the film unit may only be moved by said film advancing means after it has been fully exposed.

4,270,856

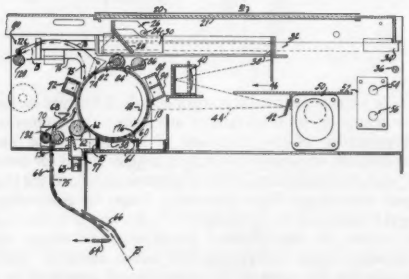
CONVERSION KIT FOR PHOTOCOPYING MACHINE

John H. Goida, Princeton, N.J., assignor to Applied Copy Technology, Inc., Princeton Junction, N.J.

Continuation-in-part of Ser. No. 799,398, May 23, 1978, abandoned. This application Jan. 16, 1979, Ser. No. 3,887

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **12 Claims**



1. A conversion apparatus for converting a conventional, Olivetti® brand, prior art, coated paper, roll fed, positive liquid toner photocopying machine of the type including at least a large console-like chassis, and air blower means, a coin feed mechanism, an electronic control system, a power supply, a photosensitive drum, a negative voltage transfer means, an optical system, a paper roll feed mechanism including a paper spindle, a paper cutting knife means, reflector and lamp assem-

blies, a liquid toner pump, a liquid toner reservoir, a conveyor, a transport, turn-around guide elements, a corona bracket, a motor, processor and toner tray, a flap and solenoid assembly, and a heater element into a negative liquid toner, plain paper, roll fed photocopying machine, said conventional prior art photocopying machine retaining at least said chassis, said paper roll feed mechanism, said paper cutting knife means, said liquid toner pump, said liquid toner reservoir and said coin feed mechanism, said conversion apparatus comprising a combination of the following elements:

a frame receivable for mounting in the chassis of said conventional photocopying machine;

an image projection system for projecting an image of the object to be duplicated, said image projection system being mounted on said frame;

a drum means mounted on said frame for receiving said image;

a drum drive means;

a liquid pump system including a toner delivery tray for providing negatively charged liquid toner to said drum, said tray being attached to said frame and connected to said liquid toner pump and said liquid toner reservoir;

a positive voltage transfer means mounted on said frame for transferring negatively charged toner from said drum to paper from said paper roll feed mechanism; and,

an electronic control circuit means for controlling the elements of the converted machine,

wherein said foregoing elements of said conversion apparatus are installed as a unit in said chassis of said conventional photocopying machine.

4,270,857

COPYING APPARATUS FOR SHEET ORIGINALS AND THICKER ORIGINALS

Shigehiro Komori; Hisashi Sakamaki, both of Yokohama; Hiroyuki Hattori, Mitaka, all of Japan; Toshihide Iida, late of Tokyo, Japan; Koichi Miyamoto, Tokyo, and Kazumi Umezawa; Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 860,457, Dec. 14, 1977, which is a continuation of Ser. No. 588,228, Jun. 19, 1975, abandoned, which is a division of Ser. No. 583,247, Jun. 3, 1975, Pat. No. 4,009,955, which is a continuation of Ser. No. 461,104, Apr. 15, 1974, abandoned, which is a continuation of Ser. No. 258,820, Jun. 1, 1972, Pat. No. 3,804,512. This application Apr. 5, 1978, Ser. No. 893,825

Claims priority, application Japan, Jun. 3, 1971, 46-38917; Jun. 3, 1971, 46-38918; Jun. 9, 1971, 46-48632; Jun. 10, 1971, 46-41195; Jun. 10, 1971, 46-41197; Jun. 10, 1971, 46-41198; Jun. 21, 1971, 46-44611; Aug. 30, 1971, 46-66740

The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.

Int. Cl.[3] G03G *15/28, 15/30*

U.S. Cl. 355—8 **25 Claims**

1. A copying apparatus comprising:

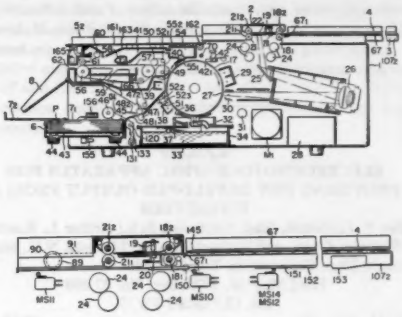
a rotatable photosensitive medium;

means for forming an image on said photosensitive medium, said image forming means including a reciprocable member for scanning an original to be copied through a slit as said reciprocable member moves along a predetermined path;

means for transferring the image onto transfer material;

means for feeding transfer material to said transferring means; and

means for reciprocating said reciprocating member a preset number of times to obtain the preset number of copies, wherein said rotatable photosensitive medium completes at least two rotations for each reciprocation of said reciprocable member, said reciprocating means including advancing means for moving the reciprocable member in a first direction along said path for scanning operation during the first rotation of the photosensitive medium in response to switch means representing a position of said reciprocable member, and returning means for moving the reciprocable member in the opposite direction after completing the scanning operation to return the reciprocable



member to a starting position during the last rotation of the photosensitive medium.

4,270,858

SCANNING AND PROJECTING DEVICE

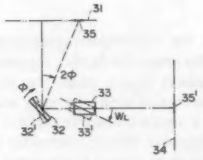
Kazuo Minoura, Yokohama; Muneharu Sugiura, Tokyo; Setsuo Minami, Kawasaki, and Tadashi Sato, Kokubunji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

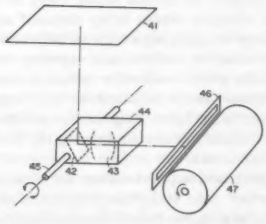
Filed Oct. 17, 1979, Ser. No. 85,493

Claims priority, application Japan, Oct. 20, 1978, 53-129734

Int. Cl.[3] G03G *15/28*

U.S. Cl. 355—8 **8 Claims**





1. A scanning and projecting device comprising:

(a) a first fixed plane, the surface of which is subjected to scanning;

(b) a second plane, on which an image of the first plane is projected;

(c) a deflector interposed between said first plane and second plane for reflecting a partial image of said first plane onto a predetermined position of said second plane with lapse of time;

(d) a projecting optical system interposed between said deflector and said second plane for rendering said first and

second planes in an optically conjugative positional relationship;

(e) means for tilting said overall projecting optical system in synchronism with rotational action of said deflector; and

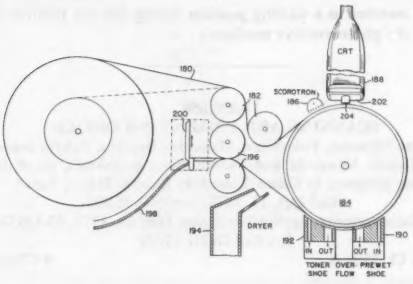
(f) means for moving at least one part of the optical elements constituting said projecting optical system in synchronism with rotational action of said deflector.

4,270,859

ELECTROPHOTOGRAPHIC APPARATUS FOR PROVIDING DRY DEVELOPED OUTPUT FROM A TYPESETTER

Wiley E. Galbraith, East Northport, N.Y.; Arthur L. Kaufman, Westport, Conn., and Herbert Klepper, Mineola, N.Y., assignors to Eltra Corporation, Toledo, Ohio

Filed May 10, 1979, Ser. No. 37,698
Int. Cl.³ G03G *15/10*
U.S. Cl. 355—10 **62 Claims**



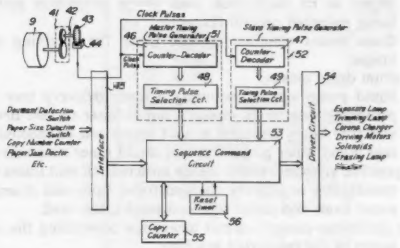
1. Apparatus for electrophotographically producing a graphic arts quality image for further reproduction including a support and transport means, means for mounting an image receiving medium on said support means, said medium being a substrate having a photoconductive surface, means for charging the photoconductive surface, means for exposing the photoconductive layer to produce a latent image, means for developing the latent image and means for removing the substrate substantially without contacting the photoconductive surface, and wherein said photoconductive substrate is mounted with said photoconductive surface facing away from the support means, said charging means being disposed adjacent to said support means for applying a substantially uniform charge to the photoconductive surface, said exposing means directing radiation to the photoconductive surface to form a latent image, development means adjacent the said support means for applying toner to the latent image on the said photoconductive surface and including means for moving the toner into contact with the photoconductive surface, and prewetting means disposed adjacent said support means for depositing a second liquid dispersant onto said photoconductive surface after exposing and charging but before developing, to provide a barrier between said toner particles and said photoconductive surface to hold said toner away from said surface until directed, by the electrostatic forces between said toner particles and said latent image, to said surface, to develop said latent image, and means disposed adjacent to said support means for removing excess liquid toner on the photoconductive surface and drying said surface as said surfaces emerges from said development means, and whereby said substrate is mounted and transported past said charging, exposing, prewet, developing, drying means, and removing means, without physical contact to said surface, to produce said graphic arts quality image.

4,270,860

ELECTROPHOTOGRAPHIC APPARATUS EMPLOYING A CONTROL ASSEMBLY FOR CONTROLLING SUCCESSIVE DUPLICATION OF A DOCUMENT

Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita; Masaji Nishikawa, both of Hachioji; Akira Shimizu, Fuchu, and Muneo Kasuga, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,628
Claims priority, application Japan, Apr. 18, 1978, 53-46185
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **14 Claims**



14. In an electrophotographic apparatus for forming at least one duplicated copy of a document comprising: a photosensitive member, said photosensitive member is movably arranged; means for substantially uniformly charging said photosensitive member; means for projecting an optical image of the document to be duplicated onto the uniformly charged photosensitive member so as to form an electrostatically charged latent image thereon corresponding to the document; means for developing the electrostatically charged latent image with toner particles to form a toner image; means for transferring the developed toner image onto a record paper at a transfer section; means for feeding the record paper through the transfer section; means for fixing the transferred toner image to form a duplicated copy; a control assembly for controlling the operation of the various aforesaid means during a duplicating operation comprising; means for producing clock pulses having a given repetition rate; first and second timing pulse generators for receiving said clock pulses to generate timing pulses at least necessary for forming a single duplicated copy in synchronism with the duplicating operation; receiving means for receiving the timing pulses from the first and second timing pulse generators to produce various control signals necessary for controlling the operation of said various means, and duplicating control means for taking over the control of the duplicating operation to form a single copy, from the first timing pulse generator to the second timing pulse generator, to thusly start the duplicating operation for forming a next copy responsive to the control of the first timing pulse generator.

4,270,861

PHOTOSENSOR CIRCUIT FOR PHOTOGRAPHIC PRINTER

Gregg S. Beckman, St. Louis Park, Minn., assignor to Pako Corporation, Minneapolis, Minn.

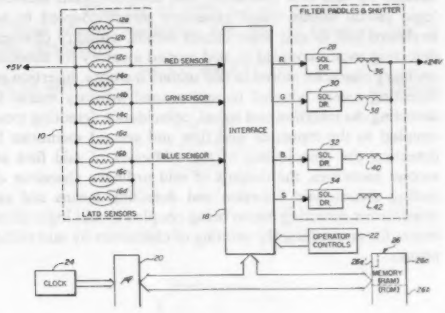
Filed Sep. 6, 1979, Ser. No. 73,105
Int. Cl.³ G03B *27/73, 27/80*
U.S. Cl. 355—38 **7 Claims**

5. In a photographic printer having photosensor means for providing an analog photosignal which is a function of light received, and having digital processor means for controlling exposures, the improvement comprising:

means for providing a gate signal in response to an enable signal from the digital processor means, the gate signal having a first state and a second state and having a duration in the second state which is a function of the analog photosignal;

means for providing clock signals of predetermined frequency;

counter means for counting in response to the clock signals when the gate signal is in its second state, whereby a count of the counter means after the gate signal changes from its



second state to its first state is a function of the duration of the gate signal in its second state; and

means for providing a signal to the digital processor means indicating completion of counting by the counter means;

wherein the digital processor means controls exposures as a function of the count of the counter means.

4,270,862

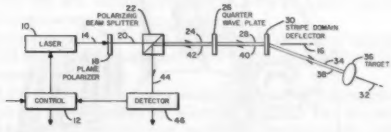
MAGNETO-OPTIC LIGHT DEFLECTOR SYSTEM

Frederick G. Hewitt, Eagan, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,071

Int. Cl.[3] **G01P** *3/36;* **G02B** *5/18*

U.S. Cl. 356—5 **7 Claims**



1. An optic system, comprising:

a source of a coherent, plane polarized, first light beam that is directed along a first optic axis;

beam splitter means, quarter wave plate means and deflector means, all aligned along said first optic axis;

said quarter wave plate means converting said plane polarized first light beam to a circularly polarized second light beam that is directed along said first optic axis and normally incident upon said deflector means;

said deflector means formed of a thin ferromagnetic film having a plurality of parallel stripe domains therein for forming a diffraction grating and directing said second light beam along a second optic axis different than said optic axis;

target means oriented along said second optic axis for intercepting said second light beam and reflecting said second light beam back along said second optic axis and upon said deflector means as a circularly polarized third light beam, the rotation direction of which is reversely rotated with respect to that of said second light beam;

said deflector means directing said third light beam back along said first optic axis and upon said quarter wave plate means and said beam splitter means;

said quarter wave plate reconverting said circularly polarized third light beam back to a linearly polarized fourth light beam the plane of polarization of which is rotated 90° with respect to that of said first light beam and which is directed upon said beam splitter means;

detector means;

said beam splitter means deflecting said fourth light beam out of said first optic axis and upon said detector means; and,

control means coupled to said detector means and the source of said first light beam for determining the time of transmission between said deflector means and said target means.

4,270,863

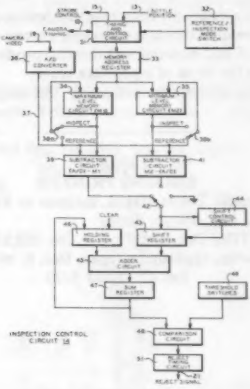
METHOD AND APPARATUS FOR INSPECTING OBJECTS FOR DEFECTS

Raymond L. Trogdon, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 1, 1979, Ser. No. 90,215

Int. Cl.[3] **G06K** *9/68;* **G01N** *21/47*

U.S. Cl. 356—71 **20 Claims**



1. In an apparatus for the automatic comparison of an object with a reference representing selected points on a standard object including a light source for illuminating a surface of the object including the selected points and a photo-sensitive detector for generating a gray scale brightness intensity level signal for each of the selected points, the improvement comprising:

means for storing a maximum and a minimum intensity level for each of the selected points;

means for generating a difference signal for each of the selected points representing the difference between the intensity level signal and said maximum intensity level when the intensity level signal is greater than said maximum intensity level and representing the difference between said minimum intensity level and the intensity level signal when the intensity level signal is less than said minimum intensity level;

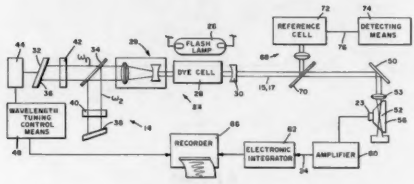
means for weighting said difference signals in accordance with the magnitudes thereof; and

means for summing said difference signals to generate an indication of the comparison of the object with the reference.

4,270,864
PHOTOACOUSTIC ROTATIONAL RAMAN SPECTROSCOPY

Joseph J. Barrett, Morris Plains, and Gary A. West, Denville, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 14, 1979, Ser. No. 20,380
The portion of the term of this patent subsequent to Mar. 7, 1995, has been disclaimed.
Int. Cl.³ G01J 3/44
U.S. Cl. 356—301 **14 Claims**

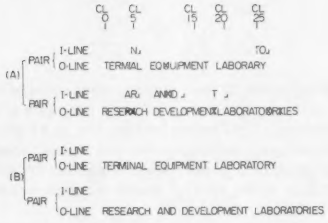


1. Apparatus for analyzing material, comprising:
a. radiation source means for generating two coherent beams of monochromatic light;
b. tuning means for adjusting the frequency difference between said beams of radiation to equal substantially the rotational frequency of a preselected constituent of said material;
c. projecting means for detecting said beams of light through said material to increase molecular energy of a preselected species of said material and thereby produce a detectable signal in the form of a pressure wave;
d. detecting means for indicating the magnitude of said signal.

4,270,865
EDITING PRINTER

Kazunori Konishi, Tokyo, Japan, assignor to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1977, Ser. No. 858,839
Claims priority, application Japan, Dec. 8, 1976, 51-146591
Int. Cl.³ B41J 5/30
U.S. Cl. 400—63 **2 Claims**

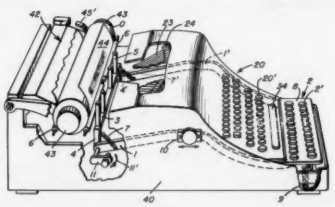


1. An editing printer comprising a printing unit capable of printing characters at a given position either on an ordinary line or on an insertion line by operation of a keyboard, with a string of characters on the insertion line from the first character to the last character just before an insertion end signal comprising data to be inserted in the ordinary line as correction data, a first random access memory for storing the input characters to be printed on an ordinary line by the operation of said keyboard, a second addressable random access memory for storing the input characters to be printed on an insertion line by the operation of said keyboard, wherein the designated address of said first memory is related to a printing position on a printing line and is the same as that of said second memory except for the insertion operation, wherein only the address of said second memory is incremented by the operation of said keyboard, and a control means for controlling said memories such that the characters printed on the insertion line including the first character and the last character before the insertion end signal are inserted in the ordinary line at the position defined by said first character, said control means including logic circuit means, pulse generator means coupled to said keyboard and to said logic circuit means, ordinary character detecting means coupled to said second memory for detecting ordinary character stored in said second memory, insertion end detecting means coupled to said second memory means for detecting the insertion end signal, coincidence detecting means coupled to the inputs of said first and second memories for detecting the coincidence of the addresses of said first and second memories, the outputs of said ordinary character detecting means, said insertion end detecting means and said coincidence detecting means being coupled to said logic circuit means for controlling the printing of characters by said editing printer.

4,270,866
PLATEN POSITIONING ATTACHMENT FOR TYPEWRITERS FOR TYPEWRITING MUSICAL NOTATION

Guido Pasqualini, Piazza San Paolo 6, Albano Laziale, Italy

Filed May 12, 1978, Ser. No. 905,134
Claims priority, application Italy, May 20, 1977, 49491 A/77
Int. Cl.³ B41J 3/34
U.S. Cl. 400—117 **6 Claims**



1. In a type bar typewriter including a carriage mounted for reciprocation, an elongated cylindrical platen means journaled in the carriage for rotation about a longitudinal axis for receiving sheet material to be imprinted, disengageable means for effecting step-wise rotation of the platen means, a primary character keyboard and character type bar means for imprinting characters on the sheet material, the improvement comprising platen positioning means operable during disengagement of the platen step-wise rotation means for incrementally rotating the platen means for advancing the sheet material to a desired type bar imprinting location relative to a musical staff imprinted on the sheet material, said platen positioning means comprising frame means, means mounted said frame means on the typewriter for pivotal movement, said frame means including a pair of spaced generally parallel coextensive supports, a bridging member secured to said supports at one end thereof, a secondary musical notation keyboard means secured to said supports at the other end thereof and including a plurality of depressible keys, each key representing a different imprinting location, roller means in driving relation to said platen means, said bridging member including means for rotating the roller means and the platen means in response to depression of a secondary musical notation keyboard means.

4,270,867
INK RIBBON MAGAZINE FOR ENDLESS INK RIBBON CARTRIDGE

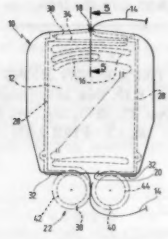
Johannes Haftmann, Borchen-Doerenhagen, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,498

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 7826639[U]

Int. Cl.³ B41J *33/14*

U.S. Cl. 400—207 **11 Claims**



1. A replaceable endless ink ribbon magazine for use with a printing unit of the type having a printing mechanism and ink ribbon drive means for feeding an endless ink ribbon through said printing mechanism, and being removable from said printing unit independently of said drive means comprising:

first and second planar members disposed in spaced parallel relationship to each other;

first and second sidewalls inter-connecting said first and second planar members to form an enclosure having an inlet end and an outlet end, each of said sidewalls extending longitudinally from said inlet end to said outlet end;

first and second spaced apart transverse walls disposed at said outlet end of said enclosure and extending between said first and second sidewalls to form an outlet opening therebetween in said enclosure;

said enclosure including an inlet opening therein at said inlet end thereof for removably receiving said ink ribbon drive means therewithin;

said ink ribbon drive means including a pair of rollers having spaced parallel axes of rotation adjacent the magazine when in the printing unit, each roller having a circumferential groove formed therein; and

first and second stationary elongate members extending toward each other from said first and second sidewalls at the inlet end of said enclosure and being received within the groove in said rollers for guiding said ribbon from said drive means into the enclosure and for retaining said ribbon within said enclosure, each of said elongate members being interposed between and spaced from said first and second planar members, whereby said elongate members automatically strip the ribbon from the drive rollers and properly align the magazine with said drive rollers.

4,270,868
DIGITAL PULSE-WIDTH MODULATED PRINTER ESCAPEMENT CONTROL SYSTEM

David B. Morgan; Robert F. Pan; Paul A. Quinn, Jr., and Glenn S. Westerman, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1978, Ser. No. 954,374

Int. Cl.³ B41J *19/00*

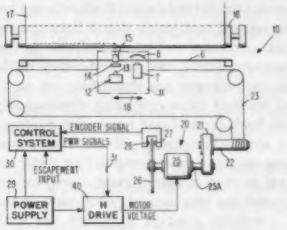
U.S. Cl. 400—320 **21 Claims**

1. In a printer having a carrier on which is disposed implements for printing indicia on a print receiving medium, an improved drive system for effecting relative motion between said carrier and said print receiving medium, said drive system comprising;

a motor operatively connected to at least one of said carrier and print receiving medium to effect relative motion therebetween;

means for generating a series of pulses having a time interval between adjacent pulses inversely proportional to the speed of said relative motion;

means for measuring the time interval between adjacent pulses and for subtracting a predetermined time interval



therefrom for generating a first digital output signal representative of the difference between the actual time interval between adjacent pulses and said predetermined time interval;

and means for generating from said first digital output signal a signal output to said motor having a duty cycle directly proportional to said first digital output signal to effect changes in the speed of relative motion.

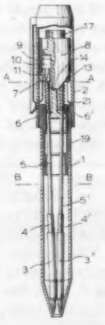
4,270,869
COMPOSITE WRITING INSTRUMENT

Kazuhiko Sekiguchi, Tokyo, Japan, assignor to Zebra Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,404

Int. Cl.³ B43K *27/20*

U.S. Cl. 401—30 **2 Claims**



1. A composite writing instrument comprising:

a lower tubular casing having openings at the upper and lower ends thereof;

a guide sleeve fixed in the opening at the upper end of said lower tubular casing and having two longitudinal guide grooves therein located diametrically opposite each other, and further having a shaft head at the top thereof and a stop on the periphery of said head;

two mechanical pencil units within said lower tubular casing at diamterically opposite positions and having writing tips directed toward the opening in the lower end of said lower tubular casing, a slider at the other end of each pencil unit engaged in a corresponding one of said two guide grooves in said guide sleeve, each of said mechanical pencil units having a pencil casing having a pencil tip

mouth piece, a rod accommodated within said pencil casing and shiftable in the axial direction thereof and a connecting sleeve coupled with said rod, a split pawl chuck for gripping a lead on said connecting sleeve at the tip thereof, said chuck having a clamping ring which is engaged with and cooperates with said chuck in a defined range of movement therewith;

a curved casing having on the top portion thereof a segment-shaped stop engageable with said stop on said guide sleeve, said curved casing further being reciprocally rotatable around said guide sleeve between two extreme rotational positions and being shiftable in the axial direction along said sleeve, said curved casing further having a cam face on the lower end thereof having an upper flat portion and inclined faces extending downwardly symmetrically from both ends of said upper flat portion and converging in a notched engaging portion, each of said inclined faces being engaged by corresponding slider units during rotational motion of said curved casing for respectively shifting said two mechanical pencil units in the axial direction to a writing position in which the writing tip thereof projects from said lower tubular casing and a retracted position at the respective extreme positions of said limited rotational motion, the units at the intermediate point in said rotational motion being accommodated within said lower casing at a neutral position, and said guide grooves terminating below said upper flat portion for stopping said pencil units in the retracted positions at a position below the cam face to leave a clearance permitting axially downward shifting of said curved casing without contact with the retracted pencil unit;

an upper tubular casing mounted on and covering said curved casing and shielding the upper end of said lower tubular casing and rotatable and axially shiftable with said curved casing;

said stop on the guide sleeve and said segment-shaped stop on the curved casing being engageable with each other at the extreme rotational positions for limiting the reciprocal rotation of said curved casing around the axis thereof with respect to said sleeve to approximately 180°;

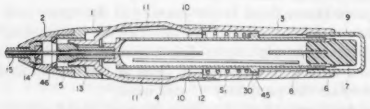
whereby when one of said pencil units is shifted to a writing position, the upper tubular casing can be shifted toward the lower tubular casing and said shifting motion is transmitted to the slider, the rod, the coupling sleeve and the pencil pawl chuck of the one pencil unit for nipping the lead of the mechanical pencil unit to acutate said pawl chuck so as to project the lead by means of said chuck in cooperation with the clamping ring of the one pencil unit.

4,270,870

MECHANICAL PENCIL WITH CHUCK CLOSING BY NORMAL WRITING GRIP

Yasuyuki Hashimoto, Nishinomiya, and Osamu Torii, Kyoto, both of Japan, assignors to Ancos Co., Ltd., Osaka, Japan

Filed May 9, 1978, Ser. No. 904,154
Claims priority, application Japan, May 22, 1977, 52/59157; Nov. 15, 1977, 52/152939[U]
Int. Cl.³ B43K *21/22, 24/10*
U.S. Cl. 401—93 **8 Claims**



1. A mechanical pencil, comprising:

(a) a hollow elongated body having at least one axial slot therein disposed in the normal finger gripping area of the body,

(b) a slotted resilient chuck disposed in said body for gripping a pencil lead when closed and for releasing said lead when open, said chuck being selfbiased to an open state,

(c) a chuck closing collar disposed in said body for cammingly engaging said chuck to close same,

(d) a depressable member disposed in said slot and biased to extend radially outwardly through said slot, and

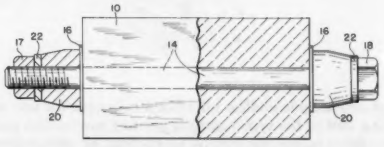
(e) means for converting the radially inward depression of said member into linear axial relative movement between said chuck and said collar, whereby the normal gripping of said pencil pursuant to the commencement of writing inherently inwardly depresses said member to thereby cause the chuck to grip the lead.

4,270,871

EXPANSION JOINT

Frederick G. J. Grise, P.O. Box 186, Osterville, Mass. 02655

Filed Dec. 27, 1977, Ser. No. 864,708
Int. Cl.² F16B *1/00*
U.S. Cl. 403—29 **2 Claims**



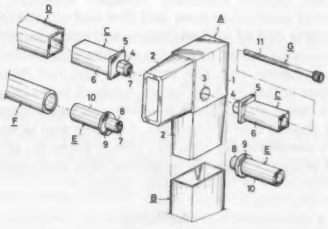
1. An expansion joint comprising a heat accepting brick, a bolt therein, a connection on the bolt against the adjacent face of the brick, means to hold the connection tightly to the brick, said means including a collar on the bolt, the coefficients of expansion of the brick, bolt, and collar being such as to balance the expansion of the brick, bolt, and collar to hold the connection tight under conditions of heat.

4,270,872

STRUCTURAL JOINT

Kesaomi Kiyosawa, 2-22-1, Minamiaoyama, Minato-ku, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,729
Claims priority, application Japan, Jan. 29, 1979, 54/9007[U]
Int. Cl.³ F16B *9/00*
U.S. Cl. 403—170 **5 Claims**



1. A structural joint formed of a plurality of selectively interconnected components, said components including:

a connector (A) comprising a base portion (**1**) and a joint rod (**2**) protruding from the base portion, the base portion having an opening (**3**) passing therethrough;

a pipe (B) having a portion thereof engageable with said joint rod to thereby connect the pipe with said connector;

a first spacer (C) for interconnecting a rectangular pipe (D) to said connector, said spacer having an internally threaded leg (**4**) insertable into said opening, a flange (**5**) abutting with said connector upon insertion of said leg into said opening, and a skirt part (**6**) projecting away

from said connector upon insertion of said leg into said opening;

a rectangular pipe (D) having a portion thereof engageable with said skirt part to thereby connect said rectangular pipe to said connector;

a second spacer (E) for interconnecting a round pipe (F) to said connector, said second spacer having an internally threaded leg (8) insertable into said opening, a flange (9) abutting with said connector upon insertion of said leg of said second spacer into said opening, and a skirt part (10) projecting away from said connector upon insertion of said leg of said second spacer into said opening;

a round pipe (F) having a portion thereof engageable with said skirt part of said second spacer to thereby connect said round pipe to said connector; and

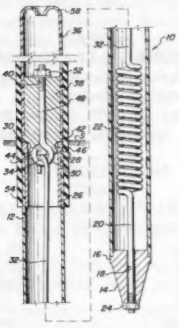
a bolt (G) insertable through said opening and having a threaded portion (11) engageable with the internally threaded portion of the leg of one of said first and said second spacers to thereby secure the engaged spacer to said connector.

4,270,873

PIVOTABLE DELINEATOR POST

Peter Laehy, and Stefan A. Dag, both of Aspen, Colo., assignors to Rapidgate, Inc., Aspen, Colo.

Filed Apr. 13, 1979, Ser. No. 29,737
Int. Cl.³ E01F 9/00
U.S. Cl. 404—10 **5 Claims**



1. A delineator post held in position by a support structure and which pivots due to an impacting force from any direction, said post comprising:

an elongated, hollow pole lower segment having a first and second end and held in the support structure;

a tip portion having an opening and extending vertically beyond said first end of said pole lower segment while connected to an inner surface of said pole lower segment, said tip portion facilitating the insertion of said pole lower segment into the support structure;

spring means having a first and second end and contained completely within said pole lower segment;

a shank having a frist and second end, said shank first end connected to said first end of said spring means and said shank second end threadedly inserted through said tip portion opening so that the amount of tension in said spring means can be adjusted;

locking means for securing said shank second end in said tip portion opening;

a rod having a hooked end and being connected to said second end of said spring means;

a first socket fixedly held contiguous with the inner surface of said pole lower segment adjacent said second end thereof and having a hollow center portion and a peripheral lip portion with a rounded edge extending vertically beyond said pole lower segment;

a pole upper segment having a first and second end and being axially alignable with said pole lower segment;

a second socket having an opening and fixedly held contiguous with an inner surface of said pole upper segment adjacent said first end thereof and having a protruding center portion extending beyond said pole so as to be inserted within said hollow portion of said first socket;

said protruding center portion having a flanged outer circumferential edge and a concave groove on the side of the flange which will contact said lip;

an eye bolt fixedly held through said second socket opening and having a pivot eye inserted through said flange slot to engage said hooked end of said rod and thereby operably connect said pole upper segment to said pole lower segment;

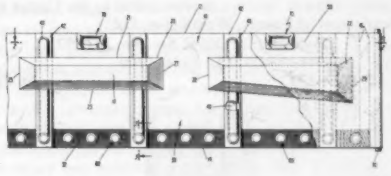
whereby, upon application of a force of sufficient magnitude against said pole upper segment, said pole upper segment pivots away from axial alignment with said pole lower segment and said spring means extends substantially coaxial with the longitudinal axis of said pole lower segment while portions of said rounded edge slidably hook against said concave groove of said flange to retain contact between the segments so that upon release of said force, said rounded edge of said first socket and said grooved flange of said second socket cooperate to connect and guide said pole upper segment into axial alignment with said pole lower segment and said spring means returns to its original condition.

4,270,874

BOTTOM TENSION FENCE-TYPE WATER BUOYANT CONTAINMENT BOOM

Frank A. March, Reston, and Louis S. Brown, Jr., Stevens City, both of Va., assignors to Seaward International, Inc., Falls Church, Va.

Filed Nov. 3, 1978, Ser. No. 957,562
Int. Cl.³ E02B 15/04
U.S. Cl. 405—63 **20 Claims**



1. A fence-type containment boom for containing and gathering water-borne pollutants on the surface of a body of water, comprising:

(a) a continuous, elongated, flexible panel having top and bottom edges and two ends;

(b) a plurality of floats secured by adhesive to both sides of said panel, said floats being centrally located and uniformly spaced on a line substantially parallel to the longitudinal axis of said panel and adapted to support said panel buoyantly upon the surface of water with part of said panel extending above the water surface;

(c) a bottom-edge reinforcing belt of flexible, continuous, elongated, closely spaced, substantially high modulus, aramid fibers adhesively secured to one side of said panel proximate the bottom edge for reinforcing the bottom edge of said panel, said reinforcing belt being longitudinally continuous and coextensive in length with said panel

and permitting application of longitudinal stresses to said bottom

(d) a plurality of elongated stiffening battens adhesively secured to one side of said panel normal to its longitudinal axis, said battens being uniformly spaced and extending substantially from the top to the bottom edges of said panel;

(e) an oil resistant, polyurethane elastomer coating uniformly covering both sides of said panel, said floats, said battens and said reinforcing means;

(f) a plurality of ballast weights attached to said panel proximate said bottom edge and uniformly spaced on a line substantially parallel to the longitudinal axis of said panel; and

(g) means at the ends of said panel for attachment to a means for towing said panel through the water to gather the oil on the surface for removal.

4,270,875

METHOD OF CREATING LANDFILL FROM RED MUD

Akio Kainuma, Tomakomai, Japan, assignor to Nippon Light Metal Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 960,018, Nov. 13, 1978, abandoned. This application Jun. 3, 1980, Ser. No. 155,951

Claims priority, application Japan, Apr. 24, 1978, 53/47887

Int. Cl.³ B09B *5/00*; G21F *9/00*

U.S. Cl. 405—129 **4 Claims**

1. In a method of reclaiming land in which a landfill material is deposited to a sufficient thickness over the land to be reclaimed and mechanically compacted, the improvement wherein said landfill material comprises red mud cake obtained by mechanically compressing red mud slurry produced as a by-product in the Bayer process for extracting alumina from bauxite, to a voids ratio in the range of about 1.0–1.5 whereby the red mud cakes require only light compaction to impart thereto a useful density as landfill and the compacted landfill is strongly resistant to disintegration and permeation by rainfall.

4,270,876

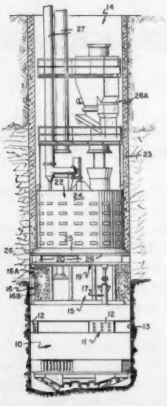
METHOD OF LINING A VERTICAL MINE SHAFT WITH CONCRETE

James D. Eklund, Mattawa; Joseph M. Halter, Richland; Donald E. Rasmussen, Spokane; Robert G. Sullivan, Richland, and Robert B. Moffat, Federal Way, all of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 27, 1979, Ser. No. 107,792

Int. Cl.³ E21D *9/00*

U.S. Cl. 405—133 **26 Claims**



1. Apparatus for forming contiguous sections of a concrete liner in a vertical shaft in cooperation with a boring machine comprising:

retainer form means including an expandable cylindrical form having first and second overlapping edges;

first power means for moving said expandable form selectively between a first position of expanded circumference and a second position of contracted circumference;

curb means including sealing means at the bottom of said expandable form for forming a lower edge of a concrete section poured between said form and the wall of said shaft;

gripper means for frictionally engaging the wall of said shaft for supporting said retainer form means independently of said boring machine;

adjusting means for adjusting said panel means relative to said gripper means for rotational and translational motion, whereby said gripper means can be placed in gripping relation with the wall of said shaft and said panel means can be adjusted relative to said gripper means; and

advancing means interconnecting said gripper means and said boring machine for lowering said form means toward said boring machine while supporting the weight of said form means on said boring machine.

4,270,877

WORKING PLATFORM

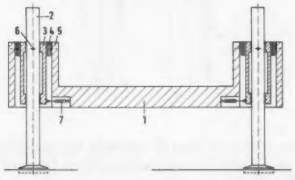
Adrianus J. Post, Heiloo, Netherlands, assignor to Steven Baggeren V.V., Beverwijk, Netherlands

Filed Nov. 21, 1978, Ser. No. 962,617

Claims priority, application Netherlands, Dec. 9, 1977, 7713674

Int. Cl.³ E02B *17/08*

U.S. Cl. 405—198 **7 Claims**



1. Floating apparatus for performing operations such as drilling and dredging in the bed of a body of water subject to turbulent movement, the apparatus including a working platform, a plurality of legs for supporting said platform from the bed of the body of water, means for supporting each leg for vertical movement with respect to the platform, and means for vertically adjusting each leg according to the depth of the bed from the surface of the water, wherein the improvement comprises:

means for pivotally connecting each leg support means to the platform at a first level of the platform and

means extending between each leg support means of at least a pair of said legs and the platform in two mutually orthogonal directions at a second level of the platform, spaced vertically from the first level, for resiliently damping pivotal movement between said legs and the platform; and

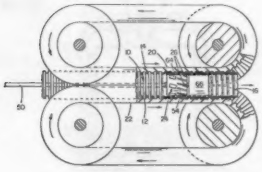
said means for vertically adjusting each leg comprises means for selectively resiliently damping vertical movement of the leg with respect to the platform.

4,270,878

CORRUGATED DRAINAGE TUBING AND METHOD AND APPARATUS FOR MAKING DRAINAGE TUBING WITH HELICALLY ARRANGED DRAINAGE OPENINGS

David E. Fales, Springfield, Ill., assignor to Rainer Isolierrohrfabrik Max Drossbach, Rain am Lech, Fed. Rep. of Germany

Division of Ser. No. 838,367, Sep. 30, 1977, Pat. No. 4,163,619.
This application Jan. 22, 1979, Ser. No. 5,448
Int. Cl.³ B23D *5/00;* **B26D** *3/00;* **B23B** *5/00*
U.S. Cl. 409—143 **9 Claims**



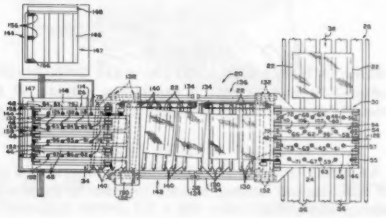
1. Cutting apparatus comprising a cutting tool for internally cutting drainage openings in the bases of valleys in corrugated thermoplastic drainage tubing characterized in that said tool comprises a body rotatably mounted on a shaft, said body adapted to fit within the tubing and having a plurality of radially projecting cutters equidistantly spaced about said body and extending outwardly therefrom, and means for rotating said body which means comprises a plurality of guides spaced apart and extending helically on said body so that said guides project radially to engage the interior of the valleys as the tubing is moved axially thereby rotating said body so that said cutters cut the bases of the valleys.

4,270,879

SHEET STACKING APPARATUS

Kenneth J. Kacirek, Fresno, Calif., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 11, 1979, Ser. No. 39,064
Int. Cl.³ B65H *29/32, 29/46, 31/10, 31/22*
U.S. Cl. 414—35 **11 Claims**



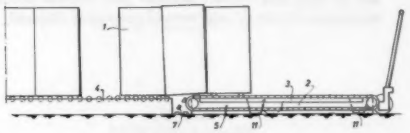
1. Apparatus for stacking sheets, comprising:
a stacking position;
a porous plate member having a major surface with a portion of the major surface of said plate member over said stacking position;
a pair of spaced belts;
means for moving said pair of spaced belts over the major surface of said plate member along a sheet movement path;
stop means mounted in the movement path adjacent said stacking position;
means for applying a vacuum at least between said pair of spaced belts to bias a sheet to be stacked against said belts;
means mounted upstream of said stop means for biasing portions of the sheet away from said belts;
means for actuating said biasing means;
means responsive to the movement of the sheet for energizing said actuating means, said actuating means including a time delay such that operation of said means responsive to the movement of the sheet causes said actuating means to actuate said biasing means a predetermined time period after the sheet engages said stop means; and
means responsive to the sheet moving away from said belts for deactivating said vacuum means.

4,270,880

LOAD TRANSFER SYSTEM

Pierre Allard, Brive-la-Gaillarde, France, assignor to Allard S.a.r.l., Brive-la-Gaillarde, France

Filed Apr. 7, 1978, Ser. No. 894,547
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740775
Int. Cl.³ B65G *47/64*
U.S. Cl. 414—391 **5 Claims**



1. A system in particular for transferring loads from a wheeled transporter on which they are carried on a pallet in a palletised condition, to a roller conveyor on which they are to be disposed in a loose condition, comprising:
two transfer conveyor means arranged in alignment with said roller conveyor, said two transfer conveyor means being parallel to the longitudinal axis of said roller conveyor and movable to the same height as said roller conveyor, and said two transfer conveyor means being mutually spaced at a distance sufficient to permit the passage therebetween of said wheeled transporter carrying the palletised loads;
strips on said wheeled transporter forming a conventional platform portion for the loads carried in the palletised condition, said strips having therebetween spaces, a series of bars adapted to be received in said spaces, said two transfer conveyor means being intended to co-operate with said series of bars which, before the transfer step, are slid below the loads, into said spaces between said strips forming said platform portion of the pallets which carry the loads, and
means varying the relative height between said transporter and said two transfer conveyor means, the length of said bars being such that they project laterally from the pallet and that they can come into a position of bearing onto said two transfer conveyor means after the relative height as between the wheeled transporter and said two transfer conveyor means has been suitably varied.

4,270,881

PRODUCE HANDLING SYSTEM

Benjamin R. Baker, Rte. 1, Norman Park, Ga. 31771, and Mickey C. Baker, Rte. 2, Moultrie, Ga. 31768

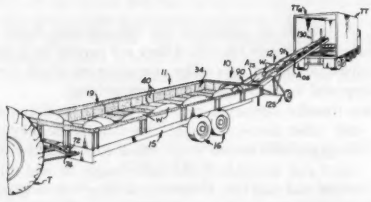
Division of Ser. No. 876,887, Feb. 13, 1978, Pat. No. 4,173,422.
This application Oct. 29, 1979, Ser. No. 88,950
Int. Cl.³ B65G *67/08, 15/08*
U.S. Cl. 414—398 **8 Claims**

1. In a produce handling system for relatively heavy fragile

produce such as watermelons, cantaloupes and the like, a free standing conveyor comprising:

an infeed section including a first pair of spaced apart longitudinally extending side members defining a first conveyor channel therebetween along the length of said infeed section, a plurality of transversely extending first cross members connecting said first side members at longitudinally spaced positions, and a first support pan extending along the length of said infeed section between said first side members over said first cross members and having a generally V-shaped cross-sectional configuration transversely of said first conveyor channel so that said first support pan extends across the transverse width of said first conveyor channel;

an outfeed section including a second pair of spaced apart, longitudinally extending side members defining a second conveyor channel therebetween along the length of said outfeed section, a plurality of transversely extending second cross members connecting said second side members at longitudinally spaced positions, and a second support pan extending along the length of said outfeed section between said second side members over said second cross members and having a generally V-shaped cross-sectional configuration transversely of said second conveyor channel so that said second support pan extends across the transverse width of said second conveyor channel;



connection means connecting one end of said infeed section to one end of said outfeed section so that the longitudinal axes of said infeed and outfeed sections are generally laterally aligned;

an idler unit at one end of said free standing conveyor;

a drive unit at the opposite end of said free standing conveyor; and

an endless conveyor belt extending along the length of said first V-shaped pan, along the length of said second V-shaped pan, around said drive unit, and around said idler unit so that said first and second support pans support said conveyor belt along opposite edges thereof when said conveyor belt is unloaded with said conveyor belt forming a natural catenary shape not in contact with said V-shaped pans between the opposed edges of said conveyor belt to cushion the produce being placed on said conveyor belt as conveyor belt moves the produce along said first and second conveyor channels so that said first and second support channels support those portions of said conveyor belt between the opposed edges of said conveyor belt distorted out of the catenary shape by the weight of the produce thereon to prevent damage to the produce as said conveyor belt supports and moves the produce along said free standing conveyor.

4,270,882

MOLECULAR PUMP OR, RESPECTIVELY, GAS-TIGHT SEALING ARRANGEMENT FOR A BODY PLACED IN A HOUSING AND RAPIDLY ROTATING ABOUT AN AXIS

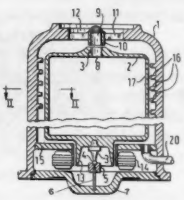
Waltherus J. Th. H. Luijten, Eindhoven, and Joost Smid, Alkmaar, both of Netherlands, assignors to Ultra-Centrifuge Nederland N.V., The Hague, Netherlands

Filed Dec. 15, 1977, Ser. No. 860,777

Claims priority, application Netherlands, Feb. 25, 1977, 7702017

Int. Cl.[2] F04B *3/02*; F01B *1/34*

U.S. Cl. 415—72 **6 Claims**



1. In a high vacuum gas tight sealing assembly: a body of revolution mounted for rotation within a housing with a gap between the inside surface of said housing and the outside surface of said body, one of said surfaces at the location of the gap being provided with at least one continuous helical groove which forms a salient helical dam, the ratio between the dam dimension in the circumferential direction and the groove dimension also measured in the circumferential direction is smaller than 0.8 and larger than 0.3, and means elastically supporting said body so that said body can adjust itself laterally.

4,270,883

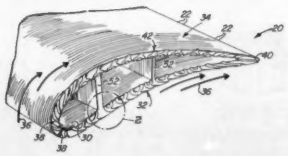
LAMINATED AIRFOIL

Charles E. Corrigan, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 789,371, Apr. 20, 1977, Pat. No. 4,221,539. This application Feb. 5, 1979, Ser. No. 9,201

Int. Cl.[3] F01D *5/18*

U.S. Cl. 416—97 A **7 Claims**



1. An airfoil for use in turbomachinery comprising a plurality of thin, stacked laminae bonded together to form a major portion of said airfoil;

each lamina having a relatively large central cavity for receiving cooling fluid flow, and a peripheral wall forming a segment of an external surface of said airfoil adapted to be arranged in momentum exchange relationship with fluid flow in said turbomachinery;

each lamina having a plurality of separate recesses in said peripheral wall spaced substantially regularly along the length of the associated segment of said external surface;

each recess including a pair of parallel legs opening separately into said central cavity, a bight communicating with both of said legs and extending therebetween generally parallel to the associated segment of said external surface, and a single exhaust port section extending from approxi-

mately the center of said bight outwardly to open onto said associated segment of the external surface.

4,270,884

WASTE GAS RECOVERY SYSTEM

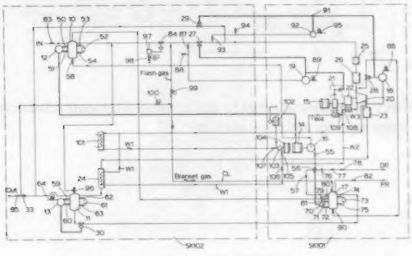
Robert F. Lintonbon, Weybridge, and David Shore, Maidenhead, both of England, assignors to Ferakarn Limited, London, England

Filed Nov. 7, 1979, Ser. No. 92,029

Claims priority, application United Kingdom, Nov. 10, 1978, 43961/78

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—15 **19 Claims**



1. A waste gas recovery system comprising a main inlet for receiving raw waste gas for processing, a compressor connected to the main inlet to receive and compress the waste gas, a main outlet for discharging the compressed waste gas, means for sensing the temperature of the gas at the outlet of the compressor, temperature control means responsive to the temperature sensing means and operable on the gas fed to the compressor to reduce the temperature of the gas at the outlet of the compressor in the event of a sensed temperature rise, a plurality of pressure-sensing means for individually sensing the pressure of the gas being fed to the compressor, means for driving the compressor at a selectively-variable speed under control of a first of said pressure-sensing means, an adjustable throttle valve for further regulating the flow of gas to the compressor under control of said first pressure-sensing means and shut-off means for isolating the compressor from the main inlet when the pressure sensed by the collective pressure-sensing means falls below minimum safety threshold level.

4,270,885

UNLOADING MEANS FOR A GAS COMPRESSOR

Robert W. Shaffer, and Henry W. Morse, both of Campbellsville, Ky., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 7, 1979, Ser. No. 36,349

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—279 **15 Claims**

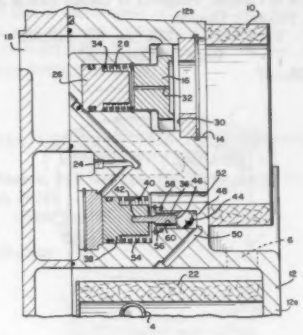
1. Unloading means, for a gas compressor having a compressed gas receiver, comprising:

means defining a gas-conducting channel;

said channel having one end thereof open for communication with the atmosphere, and an opposite end open for communication thereof with a gas compressor inlet port; and

valving means, interposed in said channel, and movable between first and second positions within said channel, having means which opens said channel to gas conduct therethrough when in said second position, and which substantially closes said channel to gas conduct when in said first position; wherein

said valving means comprises means which, when said valving means is in said first position, provides for a minute,



bleed-type, fluid-flow communication between said one and opposite ends of said channel.

4,270,886

FIFE COUPLINGS

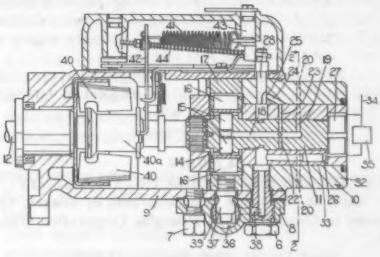
Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 30, 1979, Ser. No. 43,827

Claims priority, application United Kingdom, Jul. 18, 1978, 30195/78

Int. Cl.³ F04B *19/22, 29/00*; F16L *15/00*

U.S. Cl. 417—462 **2 Claims**



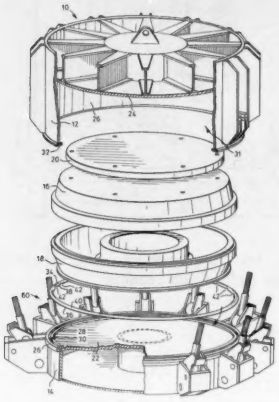
1. In a fuel pumping apparatus comprising a body part, a pump component having a pumping chamber and pumping means movable within a bore in the body part, the body part comprising inner and outer sleeves, the outer sleeve being located about the inner sleeve and shrunk thereon to impose a compressive stress thereon, a passage formed in and extending through said sleeves to the periphery of the body part with the portion of the passage in the outer sleeve being provided with the screw thread, means for the delivery of fuel from said chamber to said passage, and the outer end portion of said passage which is provided with a screw thread receiving in use, a complementary threaded pipe fitting, wherein the body part of the apparatus is cut away about said passage by between one-third and one-half of the thickness of the outer sleeve to define a boss which acts to minimize the stressing of the body part when the pipe fitting is tightened.

4,270,887

CLOSURE MECHANISM FOR TIRE CURING PRESS

David L. Tsang, Cobourg, and Wlodzimierz I. Majewicz, Toronto, both of Canada, assignors to United Tire & Rubber Co. Limited, Rexdale, Canada

Filed May 6, 1980, Ser. No. 147,340
Int. Cl.[3] B29H 5/02
U.S. Cl. 425—47 9 Claims



1. A tire curing press comprising,
(a) a housing which comprises a base member and a cover member adapted to cooperate with one another to form a tire curing chamber therein,
(b) a plurality of clamping arms located at spaced intervals about the periphery of said housing, each of said clamping arms having a first end pivotably mounted on one of said members and a second end adapted to be releasably connected to the other of said members, each of said arms being adapted to bend upon itself about a joint located between said first and second ends so as to be length adjustable between an extended configuration to facilitate mounting and release of said second end and a shortened configuration to apply a clamping pressure urging said second end toward said first end, and
(c) drive means engaging each clamping arm and operable to effect bending of each arm about its joint to extend and shorten its associated arm in use.

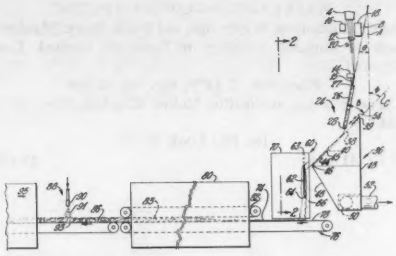
4,270,888

APPARATUS FOR PRODUCING FILAMENTS

John L. Kane, and Vikas M. Nadkarni, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 21, 1980, Ser. No. 113,996
Int. Cl.[3] D01D 5/00
U.S. Cl. 425—66 9 Claims

1. Apparatus for producing filaments comprising:
feeder means for supplying a plurality of streams of filament formable material;
attenuation means for supplying a stream of fluid to attenuate said streams of material into filaments, said filaments being entrained in said stream of fluid moving from said attenuation means along an after-defined first surface according to the Coanda effect;
a first surface extending from said attenuation means adapted to guide said stream of fluid and filaments entrained therein, said first surface having a distal end;
a housing having a fixed, foraminous surface positioned adjacent said distal end of said first surface, said foraminous surface having a first end and a second end;
flow means for establishing a vacuum within said housing, said foraminous surface, said first surface and said flow means being adapted to direct a first portion of said fluid through said foraminous surface and a second portion of said fluid to move said filaments along said foraminous surface; and



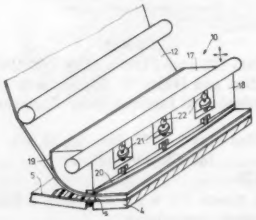
collection means adapted to collect said filaments advancing from said foraminous surface.

4,270,889

EQUIPMENT FOR THE CONTINUOUS PRODUCTION OF FOAM BOARDS

Erwin Hoffmann, Leverkusen; Kurt Krippl, Monheim; Karl J. Kraft, Leverkusen; Gerd Gabrysch, Odenthal-Neschen, and Frank Redmer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,105
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924185
Int. Cl.[3] B29D 27/04
U.S. Cl. 425—115 8 Claims

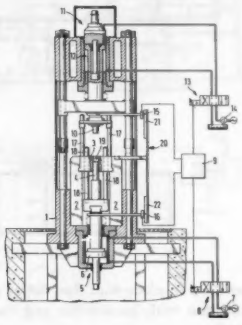


1. An apparatus for the continuous production of foam boards, comprising (i) a conveyor, (ii) a foam mixture application device located at or near one end of the conveyor, and (iii) a transverse foam mixture distribution device located downstream of said application device and above said conveyor which is adapted to transversely distribute the foam mixture to form a uniformly thick layer, the space between said distribution device and said conveyor varying over the width of the apparatus and said distribution device extending the full width of the foam board to be produced.

4,270,890
APPARATUS FOR CONTROLLING THE HEIGHT OF PRESSED WORKPIECES OF CERAMIC POWDER OR OTHER MATERIAL IN A PRESS

Hartmut Öttl, Kochel a. See, Fed. Rep. of Germany, assignor to Dorst-Keramikmaschinen-Bau, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,294
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, 2924704
Int. Cl.³ B30B *11/00, 15/16*
U.S. Cl. 425—150 1 Claim

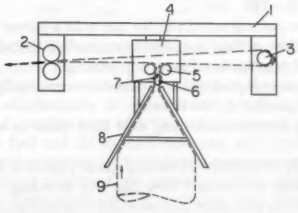


1. In a press with tool parts and with an apparatus for controlling the height of pressings to be made by said press from powder and other material, said apparatus having a frame, a plate fixedly supported in said frame and supporting one of said tool parts, other of said tool parts being able to be moved in relation to said plate, and a length measuring system, said measuring system being made up of first measuring elements fixed in relation to said moving tool parts and of second measuring elements fixed in relation to said press and designed for working with said first measuring element, the invention that said second measuring elements fixed to said press are fixed to the plate or to a support supporting said plate.

4,270,891
TAKE-OFF APPARATUS FOR FORMED TUBULAR PLASTIC FILM

Stephen M. Hopper, 7290 Starlawn Rd., Perrysburg, Ohio 43551

Filed Aug. 16, 1979, Ser. No. 67,049
Int. Cl.³ B29F *3/00*
U.S. Cl. 425—296 4 Claims



1. A cutting and take-off apparatus for handling formed tubing of plastic material extruded from a forming die comprising a main frame mounting means and thereon fastened:

a reversingly rotatable sub-assembly having flattening means,

a cutting assembly,

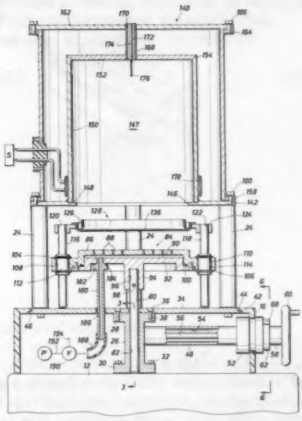
paired turning rods, said sub-assembly adapted to be reversingly rotated through an angle about the axis of the extruded tubing,

a means of collecting the two sheets of material, wherein the apparatus is assembled so that the formed tubing is collapsed by said flattening means and a cutting means is provided to but in a variable helical path about said longitudinal axis of said formed tubing resulting from a turning of said tubing about its longitudinal axis because of the induced tensil stresses imparted by the sub-assembly's rotations through an angle.

4,270,892
APPARATUS FOR MANUFACTURING DENTAL LAMINANT VENEERS

Frank R. Faunce, 215 Edinburg Ct., Castlewood, Rte. 4, Jackson, Miss. 39208

Filed Sep. 21, 1979, Ser. No. 50,051
Int. Cl.³ B29C *17/04*
U.S. Cl. 425—388 5 Claims



1. Apparatus for use in conjunction with a mold for heat and vacuum induced forming of objects such as dental laminant veneers adapted to be bonded to the teeth of dental patients, said apparatus comprising:

a base support structure;

a heating chamber having a closed top wall, closed side walls and a bottom wall defining a heating opening;

electrically energized heating means for heating said heating chamber;

support means establishing substantially fixed interconnection of said heating chamber to said base support structure;

a mold support structure being movably interconnected with said base support structure, said mold support structure defining a vacuum chamber and defining a plurality of apertures communicating with said vacuum chamber;

a source of vacuum being selectively communicated with said vacuum chamber;

means for imparting movement to said mold support structure to transport said mold support structure to a position of juxtaposed relation with said heating opening such that a mold positioned on said mold support structure will be positioned within said heating chamber;

a diaphragm adapted to be yieldably moved by said source of vacuum into cooperation with a mold positioned on said mold support structure;

diaphragm support means being movably interconnected with said mold support structure and supporting said diaphragm in interposed relation between said mold support structure and said bottom wall of said heating chamber, said diaphragm support element being transported along with said mold support structure; and

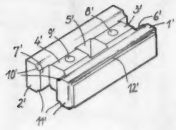
a resilient diaphragm element being secured in assembly with said diaphragm support means.

4,270,893

MOLD FOR MOLDING HOLLOW BRICKS BY MEANS OF A PRESS

Rodiero Alieri, Via Liverani, 7, Imola (Bologna), Italy

Filed Jul. 2, 1979, Ser. No. 54,521
Claims priority, application Italy, Jul. 7, 1978, 3489 A/78
Int. Cl.[3] B29C *3/00*
U.S. Cl. 425—415 **2 Claims**



1. A mold for molding bricks from a blank of plastic clay material in combination with a press having a movable crosspiece and comprising at least one punch affixed to the movable crosspiece of the press, a die supported in a yielding manner vertically with respect to the press base and provided with at least one cavity for containing the material to be pressed and engageable by said punch during the pressing step, at least one counterpunch constituting the bottom of said cavity and being movable between a position where it rests on the press base and a position where it ejects the molded brick, wherein according to the improvement the mold further comprises layers of elastic rubber-like material, coating the opposite surfaces of said punch and counterpunch, shoulders rigid with said movable crosspiece and effective to engage with said die after said punch has engaged the material containment cavity and abutments extending from said base and defining the lower stop form said die after the latter has been engaged by the shoulders.

4,270,894

COMBINATION FLUE AND VENT DAMPER

Henry J. Moore, Jr., Los Angeles, and Myron E. Deneau, Malibu, both of Calif., assignors to Mor-Flo Industries, Inc., Santa Monica, Calif.

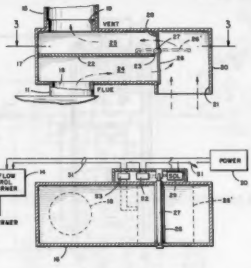
Filed Jun. 4, 1979, Ser. No. 45,084
Int. Cl.[3] F23N *3/00*
U.S. Cl. 431—20 **3 Claims**

1. A flue and vent damper in combination with a gas heater system having a gas flow control valve, flue pipe outlet and an overhead vent pipe inlet, including:

(a) a housing having at one end a flue pipe inlet on its underside for connection to said flue pipe outlet and a vent pipe outlet on its upper side for connection to said vent pipe inlet and at its other end, an ambient atmosphere inlet opening on its underside;

(b) a horizontal partition in said housing extending from said one end to pass between said flue pipe inlet and vent pipe outlet and terminating short of said other end of the housing to divide the one end of the housing into lower and upper duct passages;

(c) a single damper member pivoted to said housing for swinging movement from a first closed position in which said damper member is in a generally vertical plane normal to the extending end of said partition to close off the ends of both said lower and upper duct passages so that said flue outlet and vent inlet are isolated from each other and from ambient atmosphere to a second generally horizontal position to place said flue outlet and vent inlet in communication with each other and the ambient atmosphere; and



(d) a switch control connected in series with the circuit to said control valve, said switch control being responsive to closing of said damper means to open the circuit to said gas control valve so that no gas can pass through said control valve when said damper member is in said closed position.

4,270,895

SWIRL PRODUCER

Joel Vatsky, Millburn, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 920,295, Jun. 29, 1978, Pat. No. 4,206,712.
This application Oct. 2, 1979, Ser. No. 81,182
Int. Cl.[3] F23M *9/00;* **F23K** *5/00*
U.S. Cl. 431—183 **5 Claims**

1. A flow control apparatus for use with a burner to provide a swirling flow of fluid to maintain controlled turbulence of the burner fuel combustion flame, comprising:

a flow duct adapted to be disposed concentrically about the outlet portion of the burner;

coupling means connecting said flow duct to a source of fluid;

a plurality of radially extending guide elements disposed on the outlet side of said flow duct for directing the flow of fluid from said duct in a swirling configuration;

a second duct disposed concentrically about the flow duct;

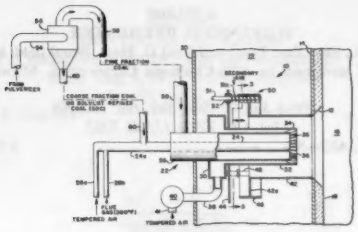
a pair of substantially parallel, spaced members operatively connected to said second duct, said spaced members defining therebetween a flow passage;

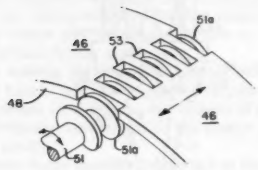
a tubular sleeve slidably disposed on said spaced members and movable to vary the size of the flow passage;

means for selectively slidably moving said tubular sleeve; said means for slidably moving said tubular sleeve includes

a plurality of spaced perforations disposed on said tubular sleeve; and

screw means rotatably disposed in operative engagement with said perforations.





whereby rotation of said screw means causes movement of said tubular sleeve axially relative to the longitudinal axis of said sleeve.

4,270,896

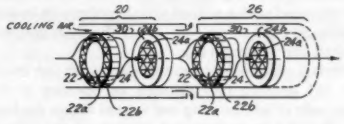
CATALYST SYSTEM

Leon M. Polinski, North Plainfield; George W. Roberts, Westfield, and Saul G. Hindin, Mendham, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Division of Ser. No. 607,775, Aug. 26, 1975, Pat. No. 4,089,654. This application May 15, 1978, Ser. No. 905,920

Int. Cl.[3] **F23D** *13/12;* **B01D** *50/00*

U.S. Cl. 431—328 **6 Claims**



1. A method for maintaining substantially constant low ignition temperature start-up combustion characteristics in a catalytically supported thermal combustion system operating essentially adiabatically at downstream temperatures above about 815° C., comprising effecting combustion by contacting a vaporous fuel and air mixture upstream and downstream in said combustion system with a catalyst system comprising:

(a) a catalyst configuration consisting of at least a downstream honeycomb catalyst portion and an upstream honeycomb catalyst portion protected therefrom, each honeycomb portion comprising as support a porous unitary solid refractory skeletal structure having upstream and downstream faces and having a plurality of unobstructed gas flow channels extending therethrough;

(b) means to secure said upstream and downstream portions substantially free of continuous thermal conduction paths through solid material between the upstream face of said downstream portion and the downstream face of said upstream portion to substantially minimize thermal conduction between said portions; and

(c) means positioned with respect to said upstream and downstream portions to substantially reduce radiant heat transfer from said downstream portion to said protected upstream portion; said upstream portion being adapted and allowed to operate at relatively substantially lower temperatures than is said downstream portion by said means to minimize thermal conduction therebetween and by said means to reduce radiant heat transfer therebetween; said upstream portion being formulated to have a higher catalytic activity than does said downstream portion but to be thermally less stable if heated substantially above said relatively lower temperatures.

4,270,897

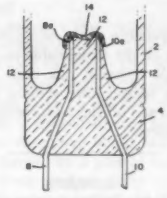
PHOTOFLASH LAMP CONSTRUCTION AND METHOD OF MAKING SAME

Donald E. Armstrong, Williamsport; Ronald E. Sindlinger, Muncy, and William J. Harvey, Trout Run, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 21, 1978, Ser. No. 971,775

Int. Cl.[3] **F21K** *5/02*

U.S. Cl. 431—362 **5 Claims**



1. A photoflash lamp comprising:

an hermetically sealed, light-transmitting glass envelope;

a quantity of filamentary combustible material, located within said envelope;

a combustion-supporting gas in said envelope; and

ignition means disposed in said envelope in operative relationship with respect to said filamentary combustible material, said ignition means including a pair of spaced-apart metal lead-in wires sealed in one end of said glass envelope, said glass-sealed pair of lead-in wires extending inside said envelope with the metal termination of each of said lead-in wires within said envelope being bare of said sealing glass, said termination of each of said lead-in wires within the envelope having the configuration of a transverse cut with a substantially flat end surface, each of said flat end surfaces of the metal lead-in wire terminations being bare of glass and flush with the surrounding glass surface, and primer material coated about the inner end of the glass-sealed extension of said lead-in wires in a manner covering and bridging said bare metal terminations.

4,270,898

CONTROL METHOD FOR A RECLAMATION FURNACE

Stephen B. Kelly, Dallas, Tex., assignor to Pollution Control Products Co., Dallas, Tex.

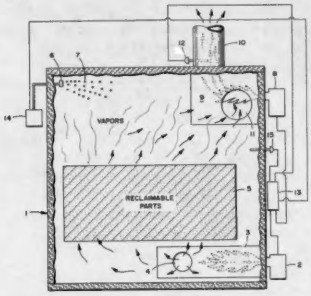
Filed Jul. 16, 1979, Ser. No. 57,728

Int. Cl.[3] **F27D** *7/00, 9/00*

U.S. Cl. 432—19 **4 Claims**

1. In a reclamation furnace having a lower heat input burner connected to a combustion chamber, structure within the furnace above the combustion chamber for supporting reclaimable parts, an upper burner connected to an afterburner chamber having a vent-stack, said upper burner and afterburner chamber together comprising an afterburner, the afterburner chamber being located within the furance above the structure for supporting reclaimable parts, a method for preventing fires and explosions, including heating contaminate materials with the input burner and burning volatile gases given off by the contaminate materials in the afterburner while sensing the

temperature in the vent-stack with the temperature sensing means actuating a valve assembly connected to a source of water, open and closed, responsive to the temperature of the discharge through the vent-stack; so that if a high volatile emission rate causes a predetermined temperature to be exceeded, the valve assembly opens, and actuates a spray nozzle which sprays water on the reclaimable parts to cool them and decrease the volatile emission rate until the valve assembly closes, and another temperature sensing means controls the heat input burner on and off through control means responsive to a preset temperature.

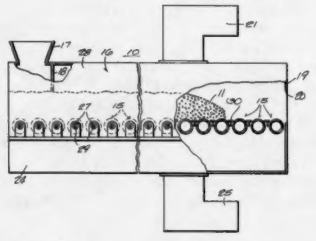


4,270,899

ROLLER GRATE MATERIAL BED TRANSPORTING AND HEAT EXCHANGE APPARATUS

Bobby P. Faulkner, New Berlin; George T. Lee, West Allis; Peter L. Schumacher, Oak Creek, and Michael H. Weinecke, Greenfield, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 21, 1979, Ser. No. 105,982
Int. Cl.³ F27B *15/00*; F26B *19/00*
U.S. Cl. 432—58 **9 Claims**



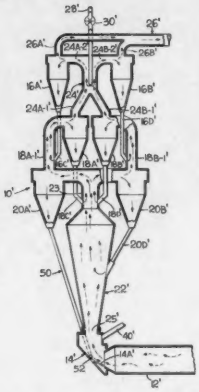
1. Roller grate apparatus for simultaneously transporting, agitating, and exchanging heat with a bed of discrete solid mineral particles comprising, in combination, a plurality of parallel horizontal elongated cylindrical rollers mounted for rotation about their longitudinal axes, elongated filler members disposed in the nip between adjacent rollers above their longitudinal axes, drive means for rotating said plurality of rollers in the same direction, said rollers together with said filler members forming a generally horizontal surface having continually moving portions which are adapted to agitate said particles and transport said bed across said surface in a direction transverse to the longitudinal axes of said rollers at a velocity which is a minor fraction of the circumferential velocity of said rollers, said rollers having gas passage apertures therein which permit a gas stream to pass therethrough in a direction transverse to their longitudinal axes, and means for passing a heat transfer gas stream in a generally vertical direction through said apertures and said bed while it is being transported and said particles are being agitated by said rollers.

4,270,900

SUSPENSION PREHEATER

James L. Shy, East Troy, and Paul D. Hess, Brookfield, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 7, 1980, Ser. No. 110,255
Int. Cl.³ F27B *15/00, 7/02*
U.S. Cl. 432—58 **3 Claims**



1. A particulate material furnacing system including:

(a) a tubular rotary kiln (**12**) defining on one end thereof a circular opening for admitting feed material to said kiln and discharging exhaust gases from said kiln;

(b) a stationary feed end housing (**14**) with an opening surrounding the feed inlet end of said kiln with a feed ramp (**14A**) mounted within said housing to slope downwardly to a lower end adjacent to a lower portion of said feed inlet end of said kiln;

(c) a suspension preheater (**10**) mounted on top of said feed end housing (**14**) with said preheater having a hollow shaft (**22**) arranged with a central axis therethrough in a vertical position and the lower end (**25**) of the shaft connected to the feed end housing (**14**);

(d) a bypass pipe (**40**) communicating with the interior of feed end housing (**14**) through an opening in the kiln facing side of said housing and spaced above the feed inlet end of said kiln to bypass a portion of the exhaust gas discharged from upper regions within said kiln (**12**) around said preheater (**10**);

(e) a material preheating stage comprising a pair of cyclone separators (**20A, 20B**) and having gas flow conduit means (**23**) connected to deliver gas from the top of said shaft (**22**) to each of said separators (**20A, 20B**);

(f) particulate material delivery means (**18C**) connected to discharge material into said conduit means (**23**);

(g) a first particulate material delivery pipe (**20D**) connecting a material discharge opening of one of said pair of cyclone separators (**20B**) to the interior of the shaft (**22**) intermediate its upper and lower ends; and the improvement comprising:

(h) a second particulate material delivery pipe (**50**) connecting a material discharge opening of the other of said pair of cyclone separators (**20A**) to the housing (**14**) with said second pipe (**50**) terminating at an opening (**52**) in said housing located adjacent the upper surface of said feed ramp (**14A'**) and spaced both horizontally away from said kiln (**12**) and vertically below said bypass pipe (**40**) to discharge feed material on to said feed ramp (**14A'**) and

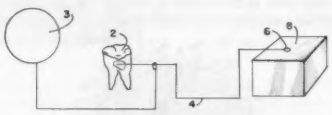
into the kiln (12) below and away from the upper layers of kiln gases passing into said bypass pipe (40), to minimize feed material loss through said bypass pipe (40).

4,270,901

DENTAL ARTICULATOR

John E. Comperetto, Star Rte., Box 66, Machipongo, Va.

Filed Aug. 9, 1978, Ser. No. 932,110
Int. Cl.[3] A61C *19/00*
U.S. Cl. 433—54 6 Claims



1. A dental articulator apparatus for forming a three-dimensional solid cam temporomandibular joint excursion model for reproducing human jaw movements within an internal solid cavity cam model, further comprising

means for making the three-dimensional solid cam model wherein human jaw movements are recorded, comprising following means for following movements of the human jaw and duplicating movements of the human jaw with said internal cavity,

a mandibular frame member connected to the three-dimensional solid cam model and to the means for making the three-dimensional solid cam model for recording human jaw movement within said internal cavity solid cam model,

guide means mounted on a mandibular frame for directing means for making the three-dimensional solid cam for recording human jaw movements within said internal cavity solid cam model,

holding means for positioning a human jaw connected to the mandibular frame for permitting the means for making the three-dimensional solid cam model to record human jaw movements

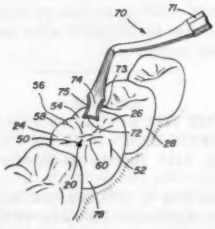
and forming means for forming a three-dimensional solid cam model external replica of human jaw movements within said internal cavity solid cam model.

4,270,902

METHOD AND APPARATUS FOR CARVING AND CONTOURING DENTAL RESTORATIONS

Lawrence Wiland, 144-15 41st Ave., Flushing, N.Y. 11355

Filed Dec. 18, 1978, Ser. No. 970,362
Int. Cl.[3] A61C *3/02*
U.S. Cl. 433—144 4 Claims



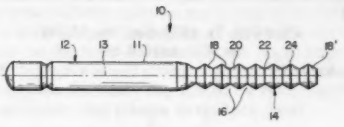
1. An occlusal-incisal dental carving instrument comprising a handle and a flattened head carried by said handle, the head terminating in a concave distal edge and having a pair of concave side edges, the longitudinal direction of said side edges being substantially perpendicular to the longitudinal direction of said distal edge, the length of said distal and side edges being substantially the same, said distal and side edges utilized for carving of a dental restoration on the occlusal surface of a tooth.

4,270,903

ABRASIVE DENTAL TOOL

John E. Nash, Downington, Pa., assignor to Syntex Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 873,748, Jan. 30, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,102
Int. Cl.[3] A61C *3/05*
U.S. Cl. 433—165 7 Claims



1. A dental tool of unitary construction for use with a dental handpiece comprising:

an elongate shank having a first operative end and a second end adapted to engage a chuck of a dental handpiece, any cross-section of said operative end perpendicular to the longitudinal axis of said shank being substantially circular, said operative end having a plurality of adjacent, continuous, substantially V-shaped annular grooves being devoid of cutting edges extending about said end, each of said grooves being formed by a pair of inclined side surfaces intersecting to form a substantially circular, lower junction lying in a plane perpendicular to the longitudinal axis of said shank, said lower junction encircling the longitudinal axis of said shank, said side surfaces intersecting side surfaces of adjacent grooves to form crests of said grooves, the included angle formed between said intersecting side surfaces being about 60° to 150°, the distance between crests of adjacent grooves being about 0.02 to 0.06 inch, and the distance from the longitudinal axis of said shank to said lower junction being greater than about 0.010 inch, and

an abrasive material covering at least a portion of the surfaces defining said grooves and having a particle size of less than about 0.006 inch,

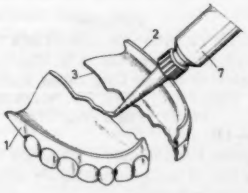
said tool being adapted to generate by abrasion a relatively smooth surface upon the manual tracking and scanning thereof across the surface of a tooth.

4,270,904

METHOD FOR REPAIRING DENTAL PROSTHESIS AND SIMILAR

Jean-Pierre Bogaert, 512, Av. Louise, 1050 Brussels, Belgium

Filed Oct. 9, 1979, Ser. No. 82,897
Claims priority, application Belgium, Oct. 11, 1978, 191050
Int. Cl.[3] A61C *13/00*
U.S. Cl. 433—167 8 Claims



1. Method for repairing a split or broken dental prosthesis, which comprises fastening the corresponding break surfaces of

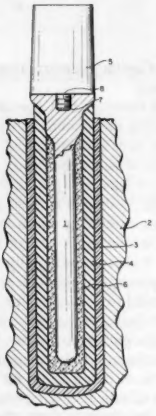
the prosthesis to one another by means of a non-toxic fast-setting adhesive having an affinity for the material the prosthesis is made of, and then forming on the lingual surface of said prosthesis facing said break surface fastened to one another, a butt-strip from polyacrylic resin having some width, said strip being fastened to the lingual surface on either side of said break surfaces.

4,270,905

REPLACEMENT SYSTEM FOR DENTAL AND OTHER BONE IMPLANTS

M. Hamdi A. Mohammed, 3236 SW. 62nd La., Gainesville, Fla. 32601

Filed Feb. 21, 1979, Ser. No. 13,064
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—201 **9 Claims**



7. A bone implant having a core providing a central shaft having a lower end, an outer component adapted to be positioned in a socket formed in a bone surrounding the central shaft and spaced therefrom to define a gap therewith, an intermediate component disposed in the gap, and means securing the intermediate component both to the central shaft and to the surrounding wall of the outer component, the outer component having a modulus of elasticity approximately that of bone, the intermediate component having a lower modulus of elasticity than either the central shaft or the outer component to permit axial movement of the central shaft relative to the outer component, said central shaft being non-convergent toward its lower end so that axial movement of the central shaft relative to the outer component imparts tensile stresses in said intermediate component which tend to contract said outer component thereby to impart tensile stresses in the surrounding portions of the supporting bone.

4,270,906

BELT TENSIONER CONSTRUCTION

Derald H. Kraft, Canton, and Daniel M. Rinaldo, Akron, both of Ohio, assignors to Dyneer Corporation, Canton, Ohio

Filed Nov. 5, 1979, Ser. No. 90,883
Int. Cl.³ F16H *7/12, 21/44*
U.S. Cl. 474—135 **20 Claims**

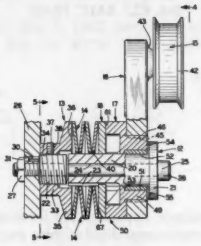
1. An improved belt tensioner construction for tensioning an endless drive belt of the drive system for vehicle accessories, said construction including:

(a) a shaft adapted to be mounted in a fixed position adjacent the drive belt;

(b) a lever rotatably mounted on the shaft and extending outwardly therefrom and movable in a belt tensioning direction;

(c) an idler pulley mounted on the lever for tensioning engagement with the drive belt when the lever is moved in the belt tensioning direction;

(d) first cam means rotatably mounted on the shaft and operatively engaged with the lever for rotating said lever;



(e) second cam means slidably mounted on the shaft and engageable with the first cam means; and

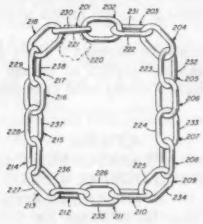
(f) spring means biasing the second cam means into camming engagement with the first cam means to rotate said first cam means and the lever to move the idler pulley in a belt-tensioning direction.

4,270,907

LINK CHAIN FOR POWER DRIVES

Manuel Rodriguez-Perazza, Winchester, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 10, 1979, Ser. No. 74,353
Int. Cl.³ F16G *13/02*
U.S. Cl. 474—200 **11 Claims**



1. A power drive including sprockets capable of engaging a standard link chain, and an endless standard link chain closed with a quarter-turn twist to increase its contact length by a factor of four, and thus extend its life when used on said power drive utilizing said sprockets.

4,270,908

APPARATUS FOR THE STACKING AND CONNECTION OF SYNTHETIC-RESIN FOIL OR SHEET BAGS

Hans Lehmacher, 5215 Niderkassel-Mondorf, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,085
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819563
Int. Cl.³ B31B *1/98*
U.S. Cl. 493—204 **7 Claims**

1. An apparatus for stacking and joining a succession of plastic bags which are separate from one another, said apparatus comprising:

a stacking device adapted to receive said separate bags in succession for stacking same and including:

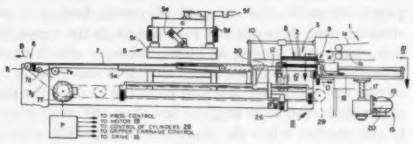
a transfer grate having spaced-apart bars extending in a direction of displacement of stacks to be formed in said device,

a stacking rake having tines receivable between said bars,

a mechanism for shifting said rake from an upper position wherein said rake overlies said bars to receive and stack a succession of bags on the rake into a lower position below the upper surfaces of said bars whereby the stack on said rake is deposited on said bars, and

at least one stop cooperating with said rake in said upper position thereof for aligning leading edges of bags deposited on said rake;

a press for bonding the bags of a stack into at least one block, said press being fixed at a location spaced from said stacking device in said direction;



a transfer device having gripper tongs disposed in at least some spaces between said bars and engageable with a stack deposited on said bars by said rake for entraining the latter stack into said press; and

a conveyor adapted to receive a stack within said press for entraining the pressed stacks in the direction of a discharge end of the apparatus in said direction, said mechanism being constructed and arranged to draw said rake from below said surface in a direction opposite the first-mentioned direction and raise same to the level of its original position above said bars prior to feeding said rake into said original position, said mechanism feeding said rake into said original position at a speed substantially corresponding to the speed at which bags are fed to said rake.

4,270,909

DEVICE AND METHOD FOR FOLDING SELF-SEALING ENVELOPE FLAPS

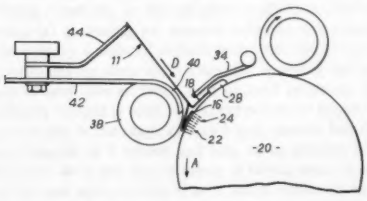
Roger H. Ireland, Bristol, England, assignor to DRF (UK) Limited, Bristol, England

Filed Jun. 12, 1979, Ser. No. 47,806

Claims priority, application United Kingdom, Jun. 19, 1978, 27294/78

Int. Cl.³ B31B *1/56*

U.S. Cl. 493—245 **4 Claims**



1. In or for a machine for producing self-sealing envelopes of the type including a main flap located at the top of the front panel of the envelope and a secondary flap located at the top of the back panel of the envelope, a device for folding the main and secondary flaps of an envelope into an inoperative condition wherein the flaps do not provide sealing of the envelope, the flaps having been previously coated with adhesive and the flaps being foldable into an operative condition wherein the adhesive on the respective flaps is brought into contact to provide sealing of the envelope; the device comprising a roller for receiving a succession of envelopes with their bottom edges leading and their front panels in contact with the roller, first stop means on the roller for arresting the bottom edge of an envelope and thereby defining the position of the envelope on the roller, suction means on the roller spaced from the first stop means so as to apply suction to the main flap of the envelope and thereby secure the main flap to the surface of the roller, abutment means adjacent the surface of the roller for engaging the front panel of the envelope as the front panel lifts from the surface of the roller and temporarily arresting the movement of the front panel with the roller whereby the main flap, on being carried around with the roller, folds relative to the front panel, and for initially supporting the envelope in a position relative to the surface of the roller so that as the main flap is carried around with the roller the upper edge of the secondary flap bears slidably upon the surface of the roller, and second stop means on the roller for arresting the upper edge of the secondary flap when in said sliding engagement with the roller so as to carry the secondary flap around the roller and thereby fold the secondary flap relative to the back panel.

4,270,910

APPARATUS FOR SEPARATING PORTIONS OF FLAT MATERIAL CUT-OUT FROM A WEB OR SHEET

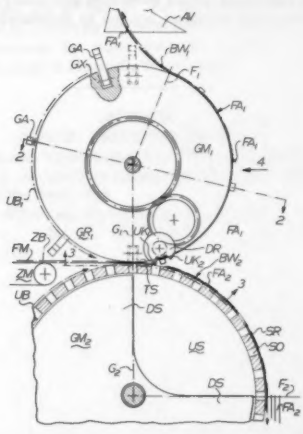
Fritz Himmelsbach, bei Papierwarenfabrik, CH-6317 Oberwil, Switzerland

Filed Jul. 18, 1978, Ser. No. 925,875

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732837; Aug. 10, 1977, 2736030

Int. Cl.³ B31B *49/00*; B65H *29/64, 29/42*

U.S. Cl. 493—373 **14 Claims**



1. Apparatus for the separation of first and second portions of a web or sheet of flat material, the first and second portions being defined by cut lines on said material, said apparatus comprising first and second gripper means for engaging respectively with the first and second cut portions of material, said respective gripper means being rotatable about parallel spaced axes to define a point of separation, and being arranged to move the first and second portions in respective paths which diverge from said point of separation, conveyor means for feeding said flat material to said gripper means, the motions of said conveyor means and said gripper means being synchronized with one another, and a rotatable roller member to separate the first and second portions of material, said roller member having on its circumference an edge conforming to at least a portion of the cut lines defining said second precut portion of material, said edge being provided by a recess formed in the circumference of said roller member, said roller member being rotatable about an axis parallel to and spaced from said axes of

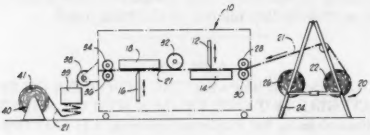
said gripper means and adjacent the path of the first precut portion of material and said point of separation, and said roller member being rotatable in synchronism with said gripper means whereby said edge moves along a circular path and contacts the second portion of material adjacent a cut line defining the second precut portion of material to separate said first and second precut portions.

4,270,911

METHOD AND SYSTEM FOR PROVIDING ELONGATED Z-FOLD COPY PAPER

Thomas A. McNew, 4229 Royal Avenue, Oklahoma City, Okla. 73108

Filed Dec. 17, 1979, Ser. No. 104,445
Int. Cl.³ B65H *45/00, 45/20*
U.S. Cl. 493—410 **11 Claims**



1. A method for producing elongated Z-fold 16–32 pound bond copy paper having indicia emplaced thereon by xerographic reproduction comprising:

transversely scoring and crimping an elongated sheet of copy paper at longitudinally spaced intervals therealong with longitudinal spaced score lines alternately originated by perforating pressures applied to alternately opposed respective sides of the paper sheet to thereby form the sheet with panels on opposite sides of the spaced score lines, said sheet being at least partially fan-folded so that respective panels on opposite sides of a score line extend at an angle of less than 180° with respect to one another; subsequently,

rolling the scored and crimped paper sheet into a cylindrical roll; and

feeding the scored paper sheet from the roll through a copying machine concurrently with the placement of an original document in the copying machine to transfer indicia from the original document to the sheet of copy paper.

9. A roll of elongated, pre-stressed, perforated xerographic copy paper comprising:

a series of integrally formed, interconnected panels, the panels of each adjacent pair of panels having a pre-stressed zone between the two panels in the respective pair, each zone having an elastic memory which causes adjacent panels to rotate about an axis in said zone in one of two directions wherein said panels in each of the pairs of panels extend at an angle of less than 180° with respect to one another when the paper is in an unrolled, substantially untensioned state, successive memories in the series of interconnected panels alternating in their direction of stress-force application causing said panels to collectively form a fan-fold configuration in the copy paper when said substantially untensioned state; and

score lines each including a line of spaced perforations, and each extending transversely across the elongated copy paper at the line of intersection between the panels in each pair of adjacent panels said paper roll being in a coiled cylindrical configuration.

4,270,912

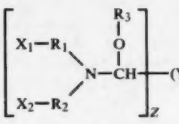
STABILIZED TANNING COMPOSITION COMPRISING A REACTION PRODUCT OF (A) POLYALDEHYDE (B) SECONDARY AMINE AND (C) AN ALCOHOL AND METHOD

William C. Prentiss, New Britain, Pa., assignor to Seton Company, Newark, N.J.

Filed Jun. 26, 1979, Ser. No. 52,217
Int. Cl.[3] C14C *3/06, 3/16, 3/18*
U.S. Cl. 8—94.26 43 Claims

1. A leather tanning composition comprising a sufficient amount of the reaction product of:
(a) a polyaldehydic compound;
(b) a secondary amine; and
(c) an alcohol,
to increase the shrinkage temperature of a hide.

11. A composition comprising a compound represented by the structural formula:



wherein Z is greater than 1, Y is a polyvalent hydrocarbon residue, R_1 and R_2 are alkylene and may be the same or different and X_1 and X_2 are hydrogen or OH and may be the same or different, "a" is equal to 0 or 1, and R_3 is an alkyl radical or hydrogen; a sufficient amount of R_3 is alkyl to impart stability to said composition.

4,270,913

PILL-RESISTANT POLYESTER FABRICS

Patrick S. Tse, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 6, 1979, Ser. No. 55,244
Int. Cl.[3] D06M *5/02, 3/04, 3/12, 5/10*
U.S. Cl. 8—115.6 20 Claims

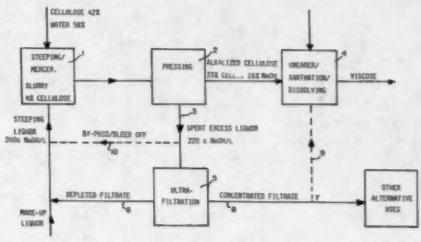
1. An improved process for reducing the pilling propensity of a fabric comprising by weight at least 50 percent polyester staple fibers having tenacities in the range of about 2 to 6 gpd, deniers less than 3 d.p.f. and lengths of 2 inches and less, without significantly affecting either the grab strength of the fabric or the fabric dyeability or the absence of sheen in the fabric, comprising (a) atomizing an aqueous solution comprising at least 5 percent by weight of sodium hydroxide into a spray of fine particles having sizes up to 130μ; (b) applying said particles onto at least one surface of an undyed polyester fabric comprising by weight at least 50 percent polyester staple fibers having tenacities in the range of 2 to 6 gpd, deniers less than 3 d.p.f. and lengths of 2 inches and less, in an amount of said particles up to 40 cc per square meter of fabric; and, (c) applying heat to said sprayed fabric at a temperature within the range from about 115° C. to about 165° C. for a period of from about 10 seconds to about 90 seconds, to saponify, in part, said polyester fiber; wherein the improvement comprises:
applying a solid deposition of about 0.5 to 4 grams sodium hydroxide flakes (76% Na_2O) per square yard of fabric to said untreated polyester fibers having tenacities in the range of about 2 to 6 gpd, in the absence of a swelling agent;
and applying dry heat;
whereby said treated fabric has a pilling performance rating of at least 4 as measured by the Random Tumble Pilling Test (ASTM D 3512) after 30 minutes and after 60 minutes.

4,270,914

PROCESS FOR CONTROLLING HEMICELLULOSE CONCENTRATION DURING THE MERCERIZATION OF CELLULOSE

Birger Dahl, Valaskjold, Norway, assignor to Borregaard Industries Limited, Sarpsborg, Norway

Filed Oct. 26, 1979, Ser. No. 88,576
Int. Cl.[3] D06M *1/02*
U.S. Cl. 8—125 4 Claims



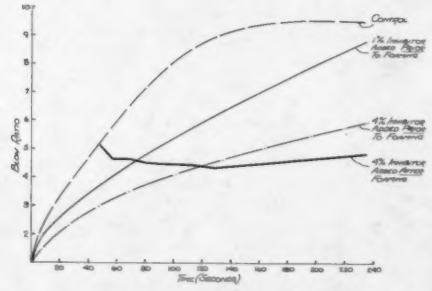
1. A continuous process for the mercerization of cellulose, comprising
(a) treating cellulose with a strong aqueous solution of sodium hydroxide;
(b) removing the excess liquor containing dissolved hemicellulose;
(c) passing said liquor through ultrafiltration to remove all or part of the dissolved hemicellulose; and
(d) returning the portion of the sodium hydroxide liquor depleted of dissolved hemicellulose to treatment step (a) and removing for other uses the ultrafiltrate portion which is high in hemicellulose content.

4,270,915

FABRIC PRINTING PROCESS

John D. Johnson, North Augusta, and Connie D. Mixon, Aiken, both of S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Sep. 19, 1978, Ser. No. 943,828
Int. Cl.[3] D06P *5/00, 1/44*
U.S. Cl. 8—477 4 Claims



1. A process for preparing a foam composition suitable for printing on a fabric comprising the steps of:
forming a foamable fabric printing composition comprised of a fabric coloring agent and a foaming agent in a liquid medium;
foaming the composition to a blow ratio in the range of from about 2:1 to about 10:1 by incorporating an inert gas therein to provide a foamed fabric printing composition having a foam density in the range of from about 0.1 gm/cc to about 0.5 gm/cc; and
introducing into the foamed fabric printing composition a

foam growth inhibiting agent when said foamed composition is at a predetermined blow ratio, said inhibiting agent being introduced in an amount to substantially maintain the volume of the foamed composition and substantially restrict further foaming thereof thereby maintaining said foamed composition at a substantially constant blow ratio after introduction of said foam growth inhibiting agent therein.

4,270,916

DYEING COMPOSITION AND METHOD

Joseph S. Racciato, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 819,906, Jul. 28, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 940,050

Int. Cl.³ D06P *67/00*

U.S. Cl. 8—527 **5 Claims**

1. A dyeing or printing aqueous composition comprising (a) an anionic polymer which is algin, xanthan gum, S-7 heteropolysaccharide gum, polyacrylic acid, or polymethacrylic acid; (b) a cationic dye which normally causes gelation or precipitation when mixed with said anionic polymer; and (c) a nonionic surfactant, an amphoteric surfactant, or an anionic surfactant other than napthalene sulfonate condensates.

4,270,917

STABILIZED AQUEOUS DYESTUFF DISPERSIONS

Terence E. Heald, and Roy Porter, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

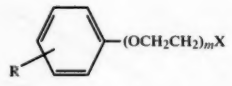
Filed Oct. 2, 1979, Ser. No. 81,057

Claims priority, application United Kingdom, Oct. 16, 1978, 40703/78

Int. Cl.³ D06P *67/00*

U.S. Cl. 8—527 **8 Claims**

1. Storage-stable aqueous dispersions of disperse dyestuffs which are susceptible to crystal growth of the dyestuff particles in the dispersion, the aqueous dispersions containing from 1% to 100% by weight based on the weight of dyestuff of a phosphated alkylphenol ethoxylate having the general formula:



wherein R represents a straight chain or branched alkyl radical containing from 5 to 20 carbon atoms, X represents OPO_3HM or OPO_3M_2 in which M is an alkali metal, ammonium or quaternary ammonium ion, and m is an integer having an average from 1 to 14.

4,270,918

REACTIVE DYES, PROCESSES FOR THEIR PRODUCTION AND USE THEREOF

Karl Seitz, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

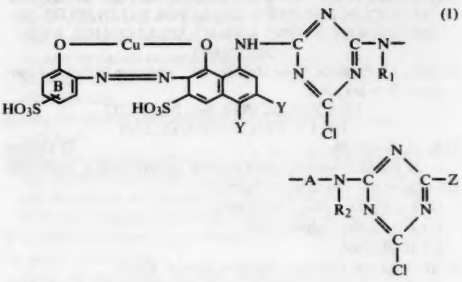
Filed Dec. 22, 1978, Ser. No. 972,621

Claims priority, application Switzerland, Jan. 6, 1978, 143/78

Int. Cl.³ C09B *62/06*

U.S. Cl. 8—549 **14 Claims**

1. A reactive dye of the formula



(I)

wherein one Y is hydrogen and the other Y is sulfo, R_1 and R_2 are hydrogen or the group $—N(R_1)—A—N(R_2)—$ is a piperazine radical, A is $C_{2)6}$-alkylene, cyclohexylene or phenylene unsubstituted or substituted by halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, acylamino of 1 to 6 carbon atoms, ureido, nitro, carboxyl or sulfo, wherein A as phenylene radical does not contain more than 1 sulfo group, and 2 is an amino, alkoxy or alkylthio group, and the benzene ring B is not further substituted or is substituted by halogen, nitro, acetylamino, methyl, cyano, carboxyl or sulfo.

4,270,919

PROCESS FOR ASSESSING THE PRESENCE OF OXIDIZING AGENTS ON OF KERATIN FIBERS

Pierre Bore, Montfermeil, and Arnaud De Labbey, Aulnay-Sous-Bois, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 6, 1979, Ser. No. 55,229

Claims priority, application France, Jul. 12, 1978, 78 20847

Int. Cl.³ G01N *31/22, 33/40, 33/52*

U.S. Cl. 23—230 B **10 Claims**

1. Process for determining by test the relative amount of residual oxidizing agent present in keratin fibers which have been subjected to treatment with an oxidizing composition that is at least partially comprised of a bromate material so as, by deductive rationalization therefrom, to be enabled to assess the apparent state of surface oxidation existant in said treated fibers, which process comprises:

(a). applying to a wet sample of the fibers to be tested a pre-impregnated porous support of given and generally substantially light coloration; said support having been previously impregnated with

(a'). an oxidation indicator solution comprised of: (i) iodide ions having a normality in said solution of between about 0.2 N and about 10 N and (ii) solubilized starch in effectively buffered acid medium containing a concentration in said solution of between about 20 and about 200 grams per liter of said starch; then

(b). with and while said porous support in (a) is maintained in contact with said wet fibers being tested, applying to said support a solution of a strong acid as a developer; and subsequently

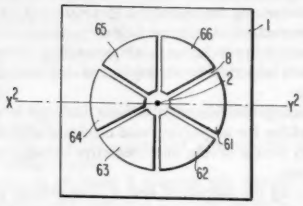
(c). removing said support and examining same to see if there has been any discernable change whatsoever in and of the initial coloration of the support.

4,270,920

INTEGRATED MATERIAL FOR CHEMICAL ANALYSIS AND A METHOD OF USING THE SAME

Asaji Kondo; Fuminori Arai, and Masao Kitajima, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 31, 1979, Ser. No. 71,618
Claims priority, application Japan, Aug. 31, 1978, 53-106850
Int. Cl.[3] G01N *33/52, 33/62, 33/66, 33/72*
U.S. Cl. 23—230 B 26 Claims



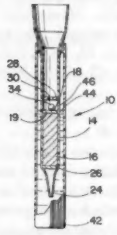
1. An integrated material for chemical analysis comprising three or more reagent layer units on a support and a porous spreading layer, said units containing reagents for different chemical analyses and being proximately arranged on a support such that approximately equal portions thereof are within a spreading circle defined by the diffusion of a liquid sample as it passes through the porous spreading layer.

4,270,921

MICROCHROMATOGRAPHIC DEVICE AND METHOD FOR RAPID DETERMINATION OF A DESIRED SUBSTANCE

Joseph E. Graas, 10527 Caminito Glenellen, San Diego, Calif. 92126

Filed Sep. 24, 1979, Ser. No. 78,145
Int. Cl.[3] G01N *33/66, 33/72, 31/08, 21/00*
U.S. Cl. 23—230 B 32 Claims



1. A microchromatographic device for use in a rapid quantitative measurement of a desired substance, the device comprising the combination of:

a microcolumn having exterior walls and containing a packing of a set amount of absorbent material, said absorbent material being contained within a predetermined intermediate portion of the microcolumn, the microcolumn containing space for accommodating liquid above an upper boundary of the intermediate portion of the microcolumn;

an eluent contained in the microcolumn, a first part of the total volume of the eluent permeating the packing of the absorbent material and being contained in the intermediate portion of the microcolumn, a second part of the eluent comprising the remainder of the total volume of the eluent, said second part of the eluent being contained in the space above the intermediate portion of the microcolumn and including a predetermined volume which is capable of selectively eluting the desired substance from the absorbent material, the second part of the eluent being at least as much as the predetermined volume of the eluent;

means located on the microcolumn below the intermediate portion for sealing the packing of absorbent material in the microcolumn but allowing for outflow of the eluent from the microcolumn at the option of an operator, and

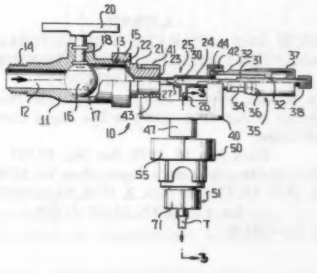
a centrifuge tube having inner walls, the microcolumn being at least partially inserted into the centrifuge tube wherein it is removably but fixedly held in an upright position, a void space being disposed between the inner walls of the centrifuge tube and the exterior walls of the microcolumn, a portion of the void space equalling in volume the predetermined volume of the eluent; the relative dimensions of the microcolumn, of the intermediate portion of the microcolumn, of the centrifuge tube, and of the second part of the total volume of the eluent being selected in such a manner that upon passage of the predetermined volume of the eluent through the microcolumn into the centrifuge tube the level of eluent in the centrifuge tube coincides with the level of the eluent remaining in the microcolumn, said level being disposed not substantially lower than the upper boundary of the intermediate portion of the microcolumn wherein the absorbent material is contained, whereby a centrifugation of the assembled microcolumn and centrifuge tube causes the passage of the predetermined volume of the eluent into the centrifuge tube and whereby the desired substance is eluted from the absorbent material into the centrifuge tube and said desired substance is dissolved in the predetermined volume of the eluent.

4,270,922

INTEGRATING CORROSION MONITOR

William B. Kerfoot, Falmouth, Mass., assignor to K-V. Associates, Inc., Falmouth, Mass.

Filed Nov. 30, 1979, Ser. No. 98,874
Int. Cl.[3] G01N *17/00*
U.S. Cl. 23—230 C 20 Claims



1. A method of determining the rate of solution corrosion of metal by liquid flowing through a metallic pipe comprising the steps of

(a) continuously bleeding off a portion of the liquid from the pipe at a predetermined rate of flow for a predetermined period of time,

(b) continuously filtering from the bled-off liquid portion heavy metals during said predetermined period of time, and

(c) determining the rate of solution corrosion of the metal by the liquid from the amount of heavy metals filtered from the liquid during the predetermined time period at the predetermined flow rate.

4,270,923

PRETREATMENT AGENT FOR SUBJECT FLUID IN PREGNANCY TEST

Koichi Kondo, Osaka; Isamu Yoshida, Takatsuki, and Takashi Kobayashi, Hikari, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 26, 1979, Ser. No. 107,179
Claims priority, application Japan, Dec. 25, 1978, 53-160762
Int. Cl.[3] G01N *33/76*
U.S. Cl. 23—230 B 6 Claims

1. A method for pretreating a subject fluid for a pregnancy test by means of an immunologic assay of human chorionic gonadotropin, which comprises removing the interfering components and turbidity from the subject fluid by contacting the subject fluid with a carboxylic acid-type cation exchange resin fiber having a cation exchange capacity of about 5 to 8 meq/g or a siliconized glass fiber prepared by impregnating a glass fiber with a solution of dimethylpolysiloxane and heating the fiber.

4,270,924

DIAGNOSTIC METHOD FOR DETECTING CANCER

Stanley T. Crooke, 110 Scottholm Blvd., Syracuse, N.Y. 13224, and Louis Galvan, 6211 Pincay Oaks Dr., Houston, Tex. 77088

Continuation-in-part of Ser. No. 28,732, Apr. 10, 1979, abandoned. This application Mar. 13, 1980, Ser. No. 124,961
Int. Cl.[3] G01N *33/54, 33/68*
U.S. Cl. 23—230 B 3 Claims

1. A method for detecting cancer in humans which comprises the steps of

(a) obtaining a blood sample from a patient to be screened for cancer;

(b) determining the concentration of inhibitor protein X in said sample; and

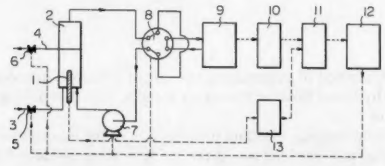
(c) comparing said concentration as determined in step (b) with the norm inhibitor protein X concentration associated with serum of cancer-free patients, whereby a significant reduction of inhibitor protein X concentration relative to the norm concentration indicates the probability of cancer.

4,270,925

METHOD AND APPARATUS FOR AUTOMATICALLY DETERMINING CHLORINE AND CHLORINE DIOXIDE CONCENTRATIONS

Isao Isa, Misato; Makoto Ebisawa, Kiryu, and Noriyuki Goto, Shinto, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1979, Ser. No. 49,187
Claims priority, application Japan, Jun. 24, 1978, 53/75956; Oct. 24, 1978, 53/130036; Nov. 2, 1978, 53/134487
Int. Cl.[3] G01N *33/18, 31/08*
U.S. Cl. 23—230 R 6 Claims



1. A method for automatically determining the respective concentrations of chlorine and chlorine dioxide in an aqueous solution comprising the following steps:

(a) feeding a portion of a chlorine and chlorine dioxide containing aqueous solution into a gas-liquid phase equilibrator at 0° C. to 40° C. and measuring the temperature of the liquid phase in said gas-liquid phase equilibrator by a temperature sensing means;

(b) feeding the gas phase of said gas-liquid phase equilibrator through a sample valve into a gas-liquid chromatograph;

(c) separating the gas phase in said gas-liquid chromatograph into air, chlorine and chlorine dioxide by a column which comprises a support selected from the group consisting of diatomaceous earth, activated alumina and polyfluorocarbon beads and a stationary liquid selected from the group consisting of polyfluorocarbon oil, silicone oil and polychlorobiphenyl;

(d) determining the respective thermal conductivities of said separated air, chlorine and chlorine dioxide with a thermal conductivity detector, and generating electrical signals which respectively correspond to said thermal conductivities;

(e) passing said electrical signals through a variable gain amplifier for amplifying said electrical signals to substantially similar levels, and thereafter through an A/D converter;

(f) feeding the outputs of said A/D converter and said temperature sensing means to a micro-computer which calculates the respective concentrations of chlorine and chlorine dioxide in aqueous solution utilizing a correction factor determined from the output of said temperature sensing means; and

(g) regulating the feeding of such aqueous solution into said equilibrator and also said variable gain amplifier by said micro-computer.

4,270,926

PROCESS FOR REMOVAL OF SULFUR AND ASH FROM COAL

Emmett H. Burk, Jr., Glenwood; Jui-Yuan Sun, South Holland, and Lloyd A. Baillie, Homewood, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jun. 19, 1979, Ser. No. 50,262
Int. Cl.[3] C10L *9/00, 9/02*
U.S. Cl. 44—1 SR 31 Claims

1. A process for reducing the sulfur and ash content of coal comprising the steps of:

(a) providing an aqueous slurry of coal particles containing ash and pyritic sulfur mineral matter;

(b) adding to the slurry and minor amount of hydrocarbon oil sufficient to effect aggregation of the coal particles;

(c) separating the coal-oil aggregates from the aqueous slurry by dissolved gas flotational means; and

(d) recovering coal-oil aggregates of reduced sulfur.

10. The process of claim 1 wherein the coal particles are minus 24 mesh, and the gas flotation means is a gas dissolved in the aqueous slurry under super-atmospheric pressure and the aqueous slurry is introduced to a flotation chamber such that at least a portion of the coal-oil aggregates float.

11. The process of claim 10 wherein the coal particles are minus 48 mesh the gas dissolved in the aqueous slurry is selected from the group consisting of air, carbon dioxide, nitrogen and methane under a pressure of from 1 to 200 psig.

18. The process of claim 1 wherein, prior to aggregation, the slurried coal particles are contacted with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the ash and pyritic sulfur mineral matter under conditions whereby there is effected modification or alteration of at least a portion of the contained ash and pyritic sulfur mineral matter.

4,270,927
PROCESS FOR REMOVAL OF SULFUR AND ASH FROM COAL

Emmett H. Burk, Jr., Glenwood; Jui-Yuan Sun, South Holland, both of Ill., and Nestor J. Troncoso, Thousand Oaks, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jun. 19, 1979, Ser. No. 50,264
Int. Cl.³ C10L *9/00, 9/02*
U.S. Cl. 44—1 SR **31 Claims**

1. A process for reducing the sulfur and ash content of coal comprising the steps of:
   (a) providing an aqueous slurry of coal particles containing ash and pyritic sulfur mineral matter;
   (b) adding to the slurry a minor amount of hydrocarbon oil sufficient to effect aggregation of the coal particles, whereby the effective particle size of the coal particles is enlarged;
   (c) separating the size-modified coal-oil aggregates from the aqueous slurry; and
   (d) recovering coal-oil aggregates wherein the coal has reduced sulfur content.

11. The process of claim 1 wherein the density-modified coal-oil aggregates are separated from the aqueous slurry by spiral classification means.

12. The process of claim 1 wherein the coal-oil aggregates are separated from the aqueous slurry, and a recovered lean aqueous slurry is reprocessed to effect substantially complete recovery of coal heating values.

18. The process of claim 1 wherein, prior to aggregation, the slurried coal particles are contacted with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the ash and pyritic sulfur mineral matter under conditions whereby there is effected modification or alteration of at least a portion of the contained ash and pyritic sulfur mineral matter.

4,270,928
DESULFURIZATION OF CARBONACEOUS MATERIALS

Robert W. Frischmuth, Huntington Beach, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

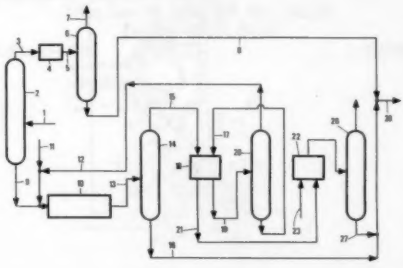
Continuation of Ser. No. 939,702, Sep. 5, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,811
Int. Cl.³ C10L *9/04, 9/08;* **C10B** *57/00*
U.S. Cl. 44—1 SR **19 Claims**

1. A process for desulfurizing a solid carbonaceous material comprising:
   a. treating a fresh solid carbonaceous material comprising both organic sulfur compounds and metal compounds and a recycle sulfurized solid carbonaceous material in a first desulfurization zone maintained at an elevated temperature with a gas comprising steam to produce a first solid carbonaceous material of lower sulfur content than the sulfur content of said fresh solid carbonaceous material;
   b. treating a first portion of said first solid carbonaceous material from said first desulfurization zone with a first gas comprising hydrogen in a conversion zone maintained at an elevated temperature to transform said organic sulfur to inorganic sulfur in said first portion of said first solid carbonaceous material and to produce a converted solid carbonaceous material and an effluent gas comprising hydrogen sulfide;
   c. separating said converted solid carbonaceous material from said effluent gas in a first separation zone;
   d. treating said converted solid carbonaceous material from said first separation zone in a second desulfurization zone to remove at least a portion of the inorganic sulfur thereof and to produce a second solid carbonaceous material of lower sulfur content than the sulfur content of said converted solid carbonaceous material;
   e. contacting a second portion of said first solid carbonaceous material from said first desulfurization zone in an adsorption zone with said effluent gas from said first separation zone to remove said hydrogen sulfide from said effluent gas and to produce a sulfurized solid carbonaceous material and a second gas comprising hydrogen of lower hydrogen sulfide content than said effluent gas;
   f. separating said sulfurized solid carbonaceous material from said second gas in a second separation zone;
   g. recycling to and utilizing in said first desulfurization zone said sulfurized solid carbonaceous material from said second separation zone as said recycle sulfurized solid carbonaceous material treated in said first desulfurization zone; and
   h. recycling to and utilizing in said conversion zone said second gas from said second separation zone as at least a part of said first gas comprising hydrogen required to transform said organic sulfur to inorganic sulfur.

4,270,929
PROCESS FOR PRODUCING GASOLINE OF HIGH OCTANE NUMBER, IN PARTICULAR LEAD-FREE GASOLINE

Quang Dang Vu, Paris; Yves Chauvin, Le Pecq; Jean Gaillard, Lyons; Bernard Torck, Boulogne sur Seine, and Michel Hellin, Andresy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 31, 1979, Ser. No. 71,503
Claims priority, application France, Aug. 31, 1978, 78 25359
Int. Cl.³ C10L *1/02*
U.S. Cl. 44—56 **9 Claims**



1. A process for producing a blended high octane gasoline, comprising the steps of:
   (a) oligomerizing an olefinic C_3 cut comprising propylene, and recovering an oligomerizate boiling in the gasoline range;
   (b) contacting a mixture of methanol and an olefinic C_4 cut comprising isobutene, isobutane and at least one n-butene with an acid catalyst under isobutene etherification conditions to produce methyl tert.-butyl ether and unreacted C_4 hydrocarbons;
   (c) fractionating the effluent from step (b) and separately recovering a methyl tert.-butyl ether fraction and an unreacted C_4 hydrocarbon fraction comprising said at least one n-butene;
   (d) subjecting the unreacted C_4 hydrocarbon fraction from step (c) to aliphatic alkylation conditions, and recovering an alkylate boiling in the gasoline range; and
   (e) blending at least a portion of said oligomerizate with at least a portion of said methyl tert.-butyl ether fraction and at least a portion of said alkylate, and recovering a blended high octane gasoline.

4,270,930
CLEAN COMBUSTION CHAMBER FUEL COMPOSITION

Curtis B. Campbell, Pinole, and Richard J. Peyla, Emeryville, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

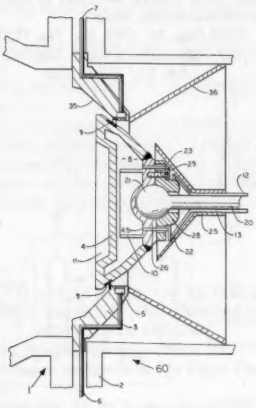
Filed Dec. 21, 1979, Ser. No. 106,348
Int. Cl.³ C10L *1/18, 1/22*
U.S. Cl. 44—71 **10 Claims**

1. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline range and from 0.3 to 3 percent by weight of a hydrocarbyl poly(oxyalkylene) aminocarbamate of molecular weight from about 600 to about 10,000 having at least one basic nitrogen atom, and wherein said hydrocarbyl group contains from 1 to about 30 carbon atoms.

4,270,931
COOLING ARRANGEMENT FOR THE LOCKING DEVICE IN PRESSURE GASIFICATION REACTORS

Peter Jaschke, Ossling; Eckhard Mönch, and Roland Weber, both of Hoverswerda, all of German Democratic Rep., assignors to VEB Gaskombinat Schwarze Pumpe, Schwarze Pumpe, German Democratic Rep.

Continuation-in-part of Ser. No. 61,309, Jul. 27, 1979, abandoned. This application May 22, 1980, Ser. No. 152,576
Claims priority, application German Democratic Rep., Jul. 7, 1978, 206576
Int. Cl.³ C10J *3/30*
U.S. Cl. 48—86 R **11 Claims**



1. A cooling arrangement, for cooling a locking device arranged in a fuel feed opening of a pressure gasification generator for gasification of solid fuel, the combination comprising a lock seat connected to the generator; a lock cone having a lowermost area positioned in a close relationship with the generator; drive means operatively connected to said lock cone to provide a linear movement of said lock cone with respect to said lock seat for opening and closing the fuel feed opening; a supply line to provide a cooling medium to said lock cone; said supply line having an end portion; a discharge line to drain the cooling medium after the latter is heated in heat exchange with the lock device components, said discharge line having an end portion, said lock-cone being formed as a hollow body to form a cooling chamber, said cooling chamber being connected to said end portions of said supply line and said discharge line respectively; and guide means arranged within said cooling chamber and extending toward said lowermost area to direct the cooling medium into contact with said lowermost area of said lock cone, wherein said supply line and said discharge line are pipe lines and said drive means includes support means for supporting said pipe lines for their respective movement along with said lock cone in said linear movement thereof, and wherein said pipe lines are provided with torsion loop portions to preclude said pipe lines from damage when the latter are deformed during the movement of the lock cone.

4,270,932
POLISHING OF SILVER-PLATED ARTICLES

Lawrence M. Perovetz, Stanmore, and Harold J. Stern, Hammersmith Grove, both of England, assignors to H.L.P. Imports Ltd., London, England

Filed Mar. 9, 1979, Ser. No. 18,938
Claims priority, application United Kingdom, Apr. 24, 1978, 16047/78
Int. Cl.³ B24D *17/00*
U.S. Cl. 51—293 **17 Claims**

1. A method of polishing and restoring a silver-plated, in particular an electroplated silver article, comprising the steps of making up a paste by the addition of water to a dry powder free of any toxic components and therefore usable in the home and in hotels, said powder consisting essentially of at least one silver generating component selected from the group consisting of silver oxide, silver nitrate, silver chloride, silver carbonate, silver acetate and silver phosphate, together with at least one reducing component for said silver-generating component, said reducing component being selected from the group consisting of potassium hydrogen tartrate, sodium potassium tartrate, sodium sulfite, sodium metabisulfate and sodium thiosulfate; said silver generating component and said reducing component being in powdered form; applying said paste to at least part of the surface of the silver-plated article; allowing the paste to remain on the surface to which it has been applied for a period of at least a few seconds; and thereafter removing the paste by the application to the coated article of a fabric, the removal of the paste being accompanied by the rubbing of the coated portions of the surface with said fabric.

4,270,933
REGENERATIVE, FLUID FILTER

Allan H. Meny, 1 Hoover St., North Arlington, N.J. 07032, and Dennis L. Palmer, 61 Douglas Dr., Towaco, N.J. 07082

Filed Mar. 19, 1980, Ser. No. 131,703
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.³ B01D *39/16*
U.S. Cl. 55—279 **9 Claims**

1. An improved, regenerative fluid filter, for removing components such as sublimated solids, particulate materials, particulate-aerosol combinants, and the like, from gas streams, said filter having a matrix formed from at least one material taken from a group of materials consisting of metal, and natural fibers such as cotton, wool, linen, flax and the like, wherein the improvement comprises:

at least one means mated to said matrix material for hardening, strengthening, and toughening said matrix material, for enhancing components-release from said filter, whereby said filter is rendered readily regenerative; and wherein

said means mated to said matrix comprises a coating and a filler agent.

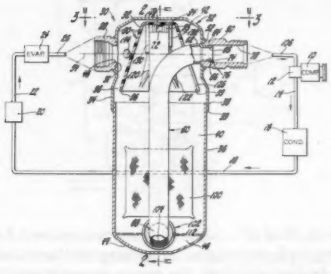
4,270,934
UNIVERSAL INTERNAL TUBE ACCUMULATOR

Richard E. Widdowson, Dayton; James B. Connolly, Springfield; Earl S. Schlotterbeck, Lewisburg, and J. D. Livesay, Tipp City, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 912,462, Jun. 5, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,697
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—316 **3 Claims**

1. In an accumulator-dehydrator assembly for an air condi-

tioning system and of the type having a casing comprised of upper and lower portions which are each closed at one end and open at the other end and are adapted to be sealingly joined together at their open ends and wherein the upper casing portion has both an inlet fitting and an outlet fitting for connection respectively to an evaporator and a compressor in the system, the improvement comprising a subassembly having a U-shaped tube and a baffle and a desiccant element which are securable as a unit in said casing and at a single point to said upper casing portion prior to joining of said lower casing portion therewith, said tube having a pair of leg portions adapted to extend substantially the length of said casing and a bight portion with a port therethrough adapted to be located adjacent the closed end of said lower casing portion, said desiccant element being formed so as to be wholly retained by



said tube by said bight portion, one of said leg portions having an open end located adjacent said closed end of said upper casing portion, said baffle being wholly supported by said tube and adapted to be interposed between said open end of said one leg portion and said inlet fitting on said upper casing portion, and an open end of said other leg portion and said outlet fitting on said upper casing portion having cooperating connector means for permitting said open end of said other leg portion to be inserted in said outlet fitting from the interior of said upper casing portion and then providing for permanent attachment therebetween whereby said subassembly is fixed in said outlet fitting from the interior of said upper casing portion prior to joining of said lower casing portion thereto and whereafter said subassembly remains secured in place in said casing independent of any attachment to said casing except for the attachment thereto at said outlet fitting.

4,270,935

FILTER ASSEMBLY FOR HIGH TEMPERATURE GLASS FIBER FILTER MEDIA

Thomas V. Reinauer, Summit, N.J., assignor to United States Filter Corporation, New York, N.Y.

Continuation of Ser. No. 810,099, Jun. 27, 1977, abandoned. This application May 14, 1979, Ser. No. 38,789

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—379 **10 Claims**

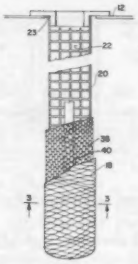
1. An improved filter assembly for separating particulate matter from a carrier gas stream when such carrier gas stream is directed through permeable fabric filter material in its passage from a dirty air plenum to a clean air plenum otherwise separated by a gas impervious tube sheet having at least one aperture therein providing fluid communication between the dirty and clean air plenums comprising:

an elongate rigid cylindrical open framework retainer means depending from the tube sheet into the dirty air plenum and having one end mounted in said aperture in the tube sheet and a longitudinal axis;

a flexible mesh sleeve means disposed in surrounding relation with the retainer means which together with the retainer means compositely form a highly porous structure for supporting the permeable fabric filter material;

the permeable fabric filter material formed to provide an elongate tubular bag sized to be slidably disposed in surrounding relation on the flexible mesh sleeve; and

removably insertable elongate means which when disposed substantially parallel to the longitudinal axis of the re-



tainer means and intermediate the retainer means and the elongate tubular bag of permeable fabric filter material increases the circumference around which the tubular bag of permeable fabric filter material is fitted whereby the tubular bag of permeable fabric filter material is maintained in a substantially taut, smooth and unwrinkled condition.

4,270,936

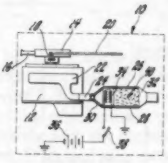
COILED FIBROUS METALLIC MATERIAL AND COATING FOR DIESEL EXHAUST PARTICULATE TRAP

Gamdur S. Mann, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 18, 1980, Ser. No. 113,223

Int. Cl.³ B01D *46/10*

U.S. Cl. 55—520 **4 Claims**



1. A fibrous filter element for a diesel engine exhaust particulate trap or the like, said element comprising a mass of coiled wire coil of flattened cross section compacted into a small passage gas pervious body, said wire being formed of a metallic material and coated with a titanate ceramic, said wire and coating being capable of withstanding temperatures of up to 1800 degrees F. without damage to the element.

4,270,937

GAS SEPARATION PROCESS

Robert J. Adler, Shaker Hts.; Coleman B. Brosilow, Cleveland Hts.; William R. Brown, Brecksville, and Nelson C. Gardner, Cleveland Hts., all of Ohio, assignors to CNG Research Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 746,662, Dec. 1, 1976, abandoned. This application Apr. 18, 1979, Ser. No. 31,318

Int. Cl.³ F25J *3/00*

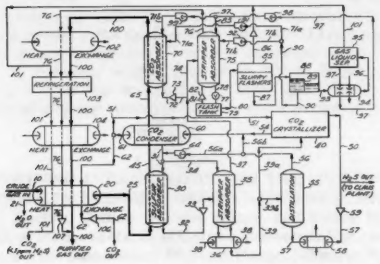
U.S. Cl. 62—17 **45 Claims**

1. A process for separating one or more relatively high boiling point gases from a gas mixture also containing one or more lower boiling point gases, comprising the steps of con-

tacting the gas mixture first with one and then with the other of the following two sorbents:

(a) liquid carbon dioxide, and

(b) particulate solids having a temperature below the triple point temperature of carbon dioxide, said particulate solids being caused to undergo a change of phase, in whole or in part, during contact with said gas mixture;



and, after each such contact, separating sorbent together with relatively high boiling point gas sorbed thereby from a residual portion of said gas mixture; and, in each instance, separating sorbent from the sorbed gas for reuse of the sorbent in the process.

4,270,938

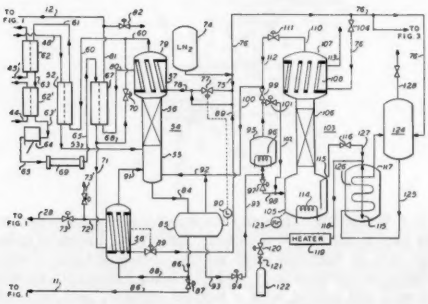
PROCESSES FOR DECONTAMINATING NUCLEAR PROCESS OFF-GAS STREAMS

Wallace B. Schmidt, Warren; William W. Lewis, Green Brook; Alex Edmiston, Sparta, and Gernot Klauser, North Plainfield, all of N.J., assignors to Airco, Inc., Montvale, N.J.

Filed Dec. 4, 1978, Ser. No. 966,447

Int. Cl.³ F25J 3/08

U.S. Cl. 62—22 **11 Claims**



1. A process for recovering krypton from a feed gas stream comprised of krypton, hydrogen, nitrogen, less than 0.1 ppm oxygen and one or more inert gases from the group consisting of argon, helium and neon comprising the steps of:

(a) continuously contacting said feed gas stream in a primary distillation column with a reflux liquid to produce a bottoms liquid-vapor containing up to about 5% krypton;

(b) continuously passing said primary column bottoms liquid and vapor to a storage vessel wherein said liquid and vapor phase are separated;

(c) intermittently withdrawing a portion of said liquid from said storage vessel and passing said withdrawn liquid as a batch to an evaporator;

(d) partially evaporating said liquid batch in said evaporator to increase the krypton fraction; and

(e) passing said remaining partially evaporated liquid to a second distillation column to produce a bottoms liquid comprised of at least 90% krypton.

4,270,939

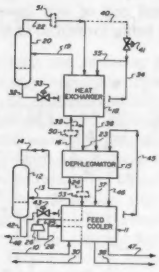
SEPARATION OF HYDROGEN CONTAINING GAS MIXTURES

Howard C. Rowles, Center Valley, and Donald W. Woodward, New Tripoli, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 6, 1979, Ser. No. 64,232

Int. Cl.³ F25J 3/02

U.S. Cl. 62—22 **8 Claims**



1. The method of separating a multicomponent hydrogen-containing feed gas mixture comprising methane and at least one low-boiling gas from the group consisting of nitrogen, argon and carbon monoxide which comprises:

(a) introducing the feed gas mixture at superatmospheric pressure into a feed cooling zone in indirect heat exchange with cooler product stream(s),

(b) precooling the feed gas mixture in said cooling zone to a temperature near its dew point or sufficient to condense a minor portion of said feed gas stream,

(c) flowing the uncondensed portion of said gas upwardly through a number of passages in a dephlegmation zone in indirect heat exchange with refrigerant supplied to said passages, whereby said gas is caused to partially condense on the walls of said passages forming a reflux liquid, such that interaction takes place between the upwardly flowing gas stream and the stream of cooler downwardly flowing liquid condensate, whereby due to resulting rectification, said liquid is progressively enriched in methane,

(d) withdrawing said liquid as a methane-enriched fuel gas product,

(e) introducing the uncondensed vapor from said dephlegmation zone into a condensing zone wherein the uncondensed vapor is cooled to a temperature at least sufficient to condense a portion of said low-boiling gas present therein,

(f) withdrawing from said condensing zone a mixed vapor-liquid stream,

(g) separating said mixed vapor-liquid stream to provide a vapor portion comprising a hydrogen-rich stream and a liquid portion composed chiefly of gas from the group consisting of nitrogen, argon, carbon monoxide and mixtures thereof,

(h) passing said separated vapor portion through said condensing and/or dephlegmation zones as additional coolant in heat exchange with the precooled feed gas passed upwardly through said zones,

(i) discharging said additional coolant from said dephlegmation zone and passing the so discharged coolant through said feed cooling zone in indirect heat exchange with the warmer feed gas,

(j) withdrawing the thus warmed coolant as a hydrogen-rich gas product essentially free of methane; and

(k) employing the separated liquid portion from step (g) as refrigerant for cooling the uncondensed vapors intro-

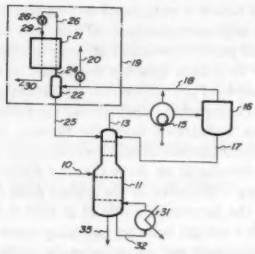
duced into said condensing zone from said dephlegmation zone.

4,270,940

RECOVERY OF C_2 HYDROCARBONS FROM DEMETHANIZER OVERHEAD

Howard C. Rowles, Center Valley, and Tsun-chiu Tsao, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 9, 1979, Ser. No. 92,894
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—28 **10 Claims**



1. The method of obtaining enhanced recovery of C_2 hydrocarbons from the vapor overhead of a demethanizer column charged with a composition containing C_2 hydrocarbons in admixture with hydrogen, methane and C_3+ hydrocarbons, which comprises the steps of condensing a portion of said overhead vapors, returning the condensate as main reflux to the demethanizer column, introducing the uncondensed vapors as a stream containing residual C_2 hydrocarbons into a dephlegmation zone for upward flow therein in indirect heat exchange with refrigerant supplied to passages in said dephlegmator, thereby effecting condensation on the walls of said passages of components of said stream including said C_2 hydrocarbons, said condensed components forming a reflux liquid such that interaction takes place between the upwardly flowing vapors and the downwardly flowing liquid such that the liquid becomes enriched in C_2 hydrocarbons, withdrawing the thus formed downwardly flowing liquid for recovery of the C_2 hydrocarbons contained therein in the liquid bottoms withdrawn from said demethanizer column, reducing the pressure of an uncondensed portion of said upwardly flowing vapors, and introducing the cold fluid stream from the pressure reduction of said uncondensed portion into the passages in said dephlegmation zone to serve as the only refrigerant supplied to said passages.

4,270,941

APPARATUS FOR PROCESSING HEAT SOFTENED MINERAL MATERIAL

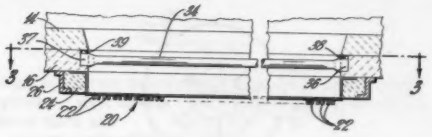
William M. Babbitt, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 888,052, Mar. 20, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,834
Int. Cl.³ C03B *37/02*
U.S. Cl. 65—1 **9 Claims**

1. Apparatus for forming molten mineral material into fibers comprising:

(a) an assembly comprising an electrically heated bushing having openings through which molten mineral material flows as streams and an entrance passage for flow of molten material into the bushing;

(b) a heat pipe within the assembly for thermally conditioning the material such that material supplied adjacent the openings in the bushings is generally of a uniform temperature throughout; and



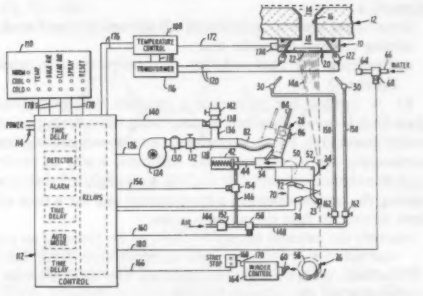
(c) means for thermally isolating the heat pipe from the assembly such that the heat pipe does not substantially act as a heat sink from the material to the assembly.

4,270,942

APPARATUS AND METHOD FOR DRAWING OF GLASS FIBER

Charles H. Coggin, Jr., Upland, and John L. Jones, Jr., Baldwin Park, both of Calif., assignors to Nitto Boseki Co. Ltd., Japan

Division of Ser. No. 865,961, Dec. 30, 1977, Pat. No. 4,149,865. This application Jan. 25, 1979, Ser. No. 6,383
Int. Cl.³ C03B *37/02*; B05B *1/16*
U.S. Cl. 65—11 W **5 Claims**



1. An improved nozzle for use in directing bulk gas against a bushing used for the drawing of glass fiber, and nozzle comprising: a body having a chamber therein; inlet means to provide for the introduction of gas into the chamber; a plurality of conduits communicating with the chamber to provide for the discharge of gas therefrom; and slide valves disposed within at least some of said conduits, said valves being selectively adjustable to vary the flow through the respective conduits, said valves each including a cylindrical valve core arranged for longitudinal and rotational movement and having a passage extending transversely therethrough for select alignment and misalignment with the conduit associated therewith, and lock means to selectively lock the core in a position wherein the passage in the core is misaligned relative to the conduit to completely close the conduit, and means to lock the core being selectively operable to lock or release the core and, in the released condition, functioning to longitudinally guide the core.

4,270,943

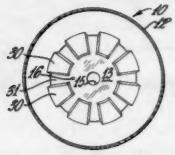
ROTARY FIBER FORMING SPINNER

John M. Riddell, Newark, Ohio, and William W. Schultz, Evanston, Ill., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 31, 1979, Ser. No. 109,006
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—15 **4 Claims**

3. A spinner for the centrifugal production of fiber comprising an apertured circumferential wall, a bottom wall and a

centrally positioned support means, the bottom wall being adapted with a plurality of projections in the form of truncated



pyramids, having outwardly curved bases and forming a plurality of paths therebetween.

4,270,944

METHOD FOR PRODUCING CALCIUM BORATES

Walter L. Eastes, Granville, and Anna Tarantino, Columbus, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 11, 1980, Ser. No. 111,437
Int. Cl.[3] C03B *1/00*
U.S. Cl. 65—27 **13 Claims**

1. A method for producing calcium borates comprising the steps of:

forming an aqueous solution of ulexite and mineral acid;

adding calcium chloride; and

neutralizing the acid solution to precipitate the calcium borates.

12. A method for preparing a calcium borate-containing glass fiber forming glass batch comprising introducing calcium borate-containing batch ingredients into a compacting zone, compacting the ingredients with sufficient water to produce agglomerates containing 5% to 20% by weight of water, and heating the agglomerates to a temperature and for a time sufficient to melt or fuse the agglomerates;

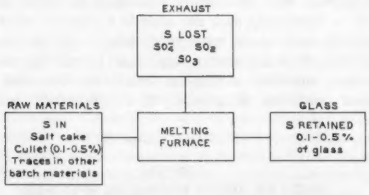
wherein the calcium borate is prepared by forming an aqueous solution of ulexite and hydrochloric acid; adding calcium chloride; and neutralizing the acid solution to precipitate the calcium borates.

4,270,945

METHOD OF MELTING FLAT GLASS USING NITRATES TO SUPPRESS SULFUROUS EMISSIONS

Alan G. Amrhein, Fresno, Calif.; Joseph J. Hammel, O'Hara Township, Allegheny County, and Larry J. Shelestak, Bairdford, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 3, 1979, Ser. No. 99,276
Int. Cl.[3] C03B *1/00, 18/02*
U.S. Cl. 65—99 A **10 Claims**



1. In the method of melting soda-lime-silica glass wherein a pool of molten glass is maintained within an elongated furnace, and glass batch materials and cullet are fed into the furnace at one end and melted glass is withdrawn at the opposite end and formed into a flat glass ribbon, wherein sources of Si, Na, Ca, Mg, Al, and Fe in the batch and cullet are proportioned to yield a glass composition comprising, by weight:

69–75 percent SiO_2
12–16 percent Na_2O
0–2 percent K_2O
8–12 percent CaO
2–5 percent MgO
0–2 percent Al_2O_3
0–7 percent Fe measured as Fe_2O_3 as the sole essential colorant;

and the interior of the furnace is maintained at sufficient temperatures and conditions to melt and react the batch and cullet to yield said glass composition; wherein the batch and cullet also include sources of sulfur, a portion of which is retained in the glass and additionally comprises 0.10 percent to 0.5 percent by weight of the product glass composition as SO_3 and the remainder of which is volatilized and escapes from the pool of molten glass as gaseous products of reaction, said volatilization and escape of part of the sulfur serving as essentially the sole fining agent to reduce gaseous inclusions in the glass to no more than one seed per square foot of formed glass ribbon, the improvement comprising: determining the sulfur content of the product glass withdrawn from the furnace and accordingly controlling the input rate of sulfur in the batch and cullet being fed into the furnace to no more than 1.4 times the output rate of sulfur being withdrawn in the melted glass product stream; feeding into the furnace at a rate of at least 0.1 percent of the batch on a dry weight basis an oxidizing agent comprising an inorganic nitrate salt; and maintaining the batch and cullet feed stream essentially free from carbon and organic materials; whereby the rate of sulfur-containing emission from the furnace is reduced while maintaining the requisite fining of the glass.

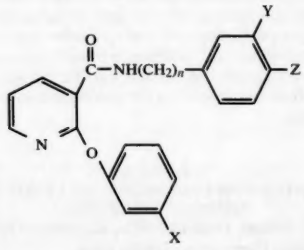
4,270,946

N-ARYL,2-PHENOXY NICOTINAMIDE COMPOUNDS AND THE HERBICIDAL USE THEREOF

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 1, 1979, Ser. No. 80,971
Int. Cl.[3] A01N *43/40*
U.S. Cl. 71—94 **13 Claims**

1. A method for controlling undesirable vegetation comprising applying to the vegetation or the locus thereof a herbicidally effective amount of a compound having the formula



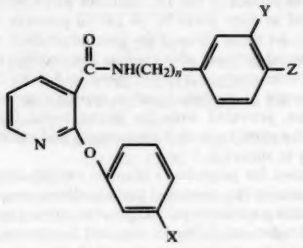
in which n is 0 or 1; X is halogen, C_1–C_3 alkyl, trifluoromethyl or carboethoxy; Y and Z are independently hydrogen, lower alkyl, halo-lower alkyl, thio(halo-lower alkyl), lower alkoxy, nitro, cyano or halogen; provided that:

if X is carboethoxy, Z is halogen and Y is hydrogen or halogen; and

if Y and Z are both halogen, X is halogen, trifluoromethyl or carboethoxy.

12. A herbicidal composition comprising:

(a) a herbicidally effective amount of a compound having the formula



in which n is 0 or 1; X is halogen, C_1–C_3 alkyl, trifluoromethyl or carboethoxy; Y and Z are independently hydrogen, lower alkyl, halo-lower alkyl, thio(halo-lower alkyl), lower alkoxy, nitro, cyano or halogen; provided that:

if X is carboethoxy, Z is halogen and Y is hydrogen or halogen; and

if Y and Z are both halogen, X is halogen, trifluoromethyl or carboethoxy; and

(b) a herbicidally suitable inert carrier or diluent.

4,270,947

α-(PHENYLAZO)-2,6-DICHLOROBENZALDIMINO ESTERS AND THEIR USE AS HERBICIDES

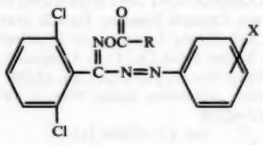
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 2, 1979, Ser. No. 54,323

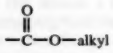
Int. Cl.[3] **A01N** *33/26;* **C07C** *107/06;* **A01N** *47/12*

U.S. Cl. 71—98 **17 Claims**

1. A compound having the following structural formula



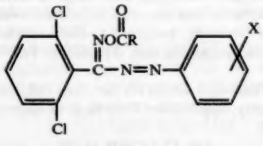
wherein R is alkyl having 1 to 4 carbon atoms; cycloalkyl having 3 to 6 carbon atoms; haloalkyl having 1 to 4 carbon atoms; alkenyl having 2 to 4 carbon atoms; alkylthio having 1 to 4 carbon atoms; alkoxy having 1 to 4 carbon atoms; —N-H—alkyl having 1 to 4 carbon atoms;



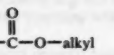
having 1 to 4 carbon atoms; phenyl or monohalophenyl; and X is hydrogen; alkyl having 1 to 4 carbon atoms; monohalo; dihalo, or nitro.

17. A composition of matter comprising:

a. a herbicidally effective amount of a compound having the structural formula



wherein R is alkyl having 1 to 4 carbon atoms; cycloalkyl having 3 to 6 carbon atoms; haloalkyl having 1 to 4 carbon atoms; alkenyl having 2 to 4 carbon atoms; alkylthio having 1 to 4 carbon atoms; alkoxy having 1 to 4 carbon atoms; —N-H—alkyl having 1 to 4 carbon atoms;



having 1 to 4 carbon atoms; phenyl or monohalophenyl; and X is hydrogen; alkyl having 1 to 4 carbon atoms; monohalo; dihalo or nitro; and

b. an inert carrier therefor.

4,270,948

HERBICIDAL COMPOUND, HERBICIDAL COMPOSITION CONTAINING THE SAME, AND METHOD OF USE THEREOF

Ryohei Takahashi, Kusatsu; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Sinzo Someya, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

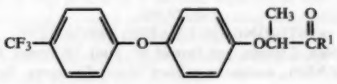
Continuation of Ser. No. 893,861, Apr. 6, 1978, abandoned, which is a division of Ser. No. 596,784, Jul. 17, 1975. This application Oct. 17, 1979, Ser. No. 86,119

Claims priority, application Japan, Jul. 17, 1974, 49/82403; Jul. 17, 1974, 49/82404; Oct. 14, 1974, 49/117047

Int. Cl.[3] **A01N** *37/10;* **C07C** *153/11*

U.S. Cl. 71—100 **4 Claims**

1. A compound having the formula:



wherein R^1 is an ethylthio group.

4,270,949

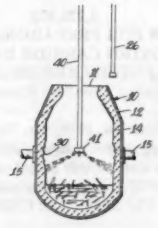
MAKING OF STEEL BY THE BOF PROCESS

Edward J. Esposito, Cortland, and Matthew J. Blair, Niles, both of Ohio, assignors to United Refractories, Inc., Warren, Ohio, by said Edward J. Esposito and Republic Steel Corporation, Cleveland, Ohio, by said Matthew J. Blair

Filed Jan. 24, 1979, Ser. No. 6,284

Int. Cl.[2] **C21C** *5/44;* **F27D** *1/16;* **C21C** *7/00*

U.S. Cl. 75—60 **8 Claims**



1. The combination of a BOF vessel used in the making of steel, said vessel being refractory lined and movable about a substantially horizontal axis to and from an upright position, and adapted to receive a charge of iron scrap and molten iron, and an oxygen lance and means for moving said lance into said vessel at predetermined times when said vessel is in upright position, said lance performing its normal function of delivering oxygen under pressure from the nozzle of the lance and onto the metallic charge within said vessel to refine the metal, the improvement for coating areas of said vessel lining with refractory material, comprising:

a coating lance separate from said oxgyen lance and having

an outlet nozzle and an inlet connected to a source of flowable refractory material,

means for moving said coating lance into said vessel while the latter is in an upright position to dispose its nozzle in cooperative relation with any lining area in need of repair, and

means for holding said oxygen lance in standby, inoperative position when said coating lance is within said vessel.

4,270,950

MACHINABLE FERRITE STAINLESS STEELS

Tatsuo Fujiwara, Nagoya; Shozo Abeyama; Kiyohito Ishida, both of Agui, and Sadayuki Nakamura, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Division of Ser. No. 942,138, Sep. 13, 1978. This application Feb. 8, 1980, Ser. No. 119,846

Claims priority, application Japan, Sep. 20, 1977, 52-112158

Int. Cl.³ C22C *38/22, 38/60, 39/16*

U.S. Cl. 75—126 L **1 Claim**

1. Machinable ferrite stainless steels consisting of not more than 0.030% of C, not more than 0.050% of N, not more than 0.012% of O, not more than 0.8% of Si, not more than 1.6% of Mn, 0.05–0.40% of S, 16–22% of Cr, 1–3% of Mo, and at least one of 0.03–0.25% of Pb, 0.03–0.20% of Se and 0.01–0.15% of Te, the remainder being Fe, provided that the sum of C and N is not more than 0.060% and Mn/S is 2–5, characterized in that Cr content based on 100 parts by weight of sulfide inclusions formed in the said steels is 10–50 parts by weight.

4,270,951

SINTERING OF COATED BRIQUETTE

Sang K. Suh, Livonia, and Daniel W. Hall, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1978, Ser. No. 967,926

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—200 **7 Claims**

1. A method of making sintered powder metal parts from selected metal powders having a predetermined size, comprising:

(a) after having compacted the powder into a preform at substantially ambient temperature conditions, coating said preform with a thin shell of a chemically inactive radiation absorbing material under ambient conditions,

(b) sintering said coated preform in a furnace chamber by predominantly radiation heating.

4,270,952

PROCESS FOR PREPARING TITANIUM CARBIDE-TUNGSTEN CARBIDE BASE POWDER FOR CEMENTED CARBIDE ALLOYS

Yoshinobu Kobayashi, 3599-73, Honmachida, Machida-shi, Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 918,946

Claims priority, application Japan, Jul. 1, 1977, 52-79394

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.³ B22F *3/00;* **C22C** *29/00*

U.S. Cl. 75—203 **6 Claims**

1. A process for preparing a titanium carbide-tungsten carbide base powder for cemented carbide alloys comprising the steps of molding a mixture of TiC powder starting material, an amount of binder metal powder required for sintering the TiC material and WC powder in an amount of 65–30 parts by weight per 35–70 parts by weight of TiC, the TiC material having a combined carbon content lower than the theoretical value; sintering the molded mixture by heating the mixture at a high temperature of 1550° to 2500° C. under conditions inert to TiC and WC to dissolve the WC particles in the TiC particles; maintaining the sintered product at the high temperature to fully remove the resulting oxide from the surface of the TiC particles and to thereby render the TiC particles highly compatible with the binder metal, causing the binder metal to fully fuse onto the surface of the TiC particles while permitting the binder metal to form pores by its partial pressure within the resulting binder metal phase of the sintered product; and crushing the sintered product after cooling the product to thereby obtain a powder composed of TiC particles having the highest possible content of combined carbon approximate to the theoretical value, provided with the binder metal fused to the surface of the particles with high strength and exhibiting high amenability to sintering.

5. A process for preparing a titanium carbide-tungsten carbide base powder for cemented carbide alloys comprising the steps of molding a mixture of TiC powder starting material, an amount of binder metal powder required for sintering the TiC material, WC powder in an amount of 65–30 parts by weight per 35–70 parts by weight of TiC, and a sintering reaction accelerating agent, the TiC material having a combined carbon content lower than the theoretical value; sintering the molded mixture by heating the mixture at a high temperature of 1550° to 2500° C. under conditions inert to TiC and WC to dissolve the WC particles in the TiC particles; maintaining the sintered product at the high temperature to fully remove the resulting oxide from the surface of the TiC particles and to thereby render the TiC particles highly compatible with the binder metal, causing the binder metal to fuse onto the surface of the TiC particles while permitting the binder metal to form pores by its partial pressure within the resulting binder metal phase of the sintered product; and crushing the sintered product after cooling the product to thereby obtain a powder composed of TiC particles having the highest possible content of combined carbon approximate to the theoretical value, provided with the binder metal fused to the surface of the particles with high strength and exhibiting high amenability to sintering.

4,270,953

TWO COMPONENT ANTIFOULING PAINT

Keizo Nakagawa; Katsushi Yamano; Takashi Watanabe; Kunio Yamamoto, and Shigeo Inomata, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Filed Mar. 6, 1979, Ser. No. 18,049

Claims priority, application Japan, Mar. 9, 1978, 53-27512; Jun. 9, 1978, 53-68958

Int. Cl.³ C09D *5/14*

U.S. Cl. 106—16 **35 Claims**

1. In an antifouling paint comprising an organotin polymer, an antifoulant copper compound and a vehicle resin, the improvement wherein said paint comprises Component A containing said organotin polymer, and Component B containing said copper compound and said vehicle resin, and said Component A is in a first package separate from component B, and said Component B is in a second and separate package, said first and second packages being adapted to permit mixing of said Components A and B within two weeks prior to application of said paint to a substrate, with the proviso that said Component A does not contain any of said copper compound, and said Component B does not contain any of said organotin polymer.

4,270,954

INORGANIC FIBERS

Alois Aignesberger, Trostberg, Fed. Rep. of Germany; Walter Lukas, Innsbruck, Austria, and Ekkehard Weinberg, Stein, Fed. Rep. of Germany, assignors to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Apr. 28, 1977, Ser. No. 792,081

Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621611

Int. Cl.² C04B *31/04*

U.S. Cl. 106—47 R **6 Claims**

1. Inorganic fibers based on calcium sulfate dihydrate or calcium sulfate aluminate hydrate, or their dehydration prod-

ucts, having a ratio of average length to diameter of more than 100:1 and a length of at least 0.2 mm.

4,270,955

TREATMENT FOR REDUCING THE DUSTING OF TREATED ZINC OXIDE

Donald M. Eshelman, Perry, Ohio, assignor to The New Jersey Zinc Company, Nashville, Tenn.

Filed Apr. 29, 1980, Ser. No. 145,008
Int. Cl.³ C09C *1/04*
U.S. Cl. 106—296 **32 Claims**

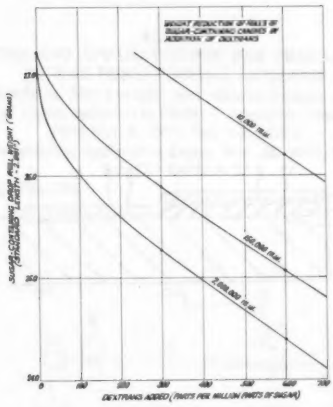
1. A treatment for reducing the dusting of a particulate zinc oxide which has been treated with propionic acid for incorporation in rubbers and plastics, comprising treating said particulate zinc oxide with a phosphate selected from the group consisting of trialkyl phosphates, tributoxyethyl phosphate, tricresyl phosphate and mixtures thereof in an amount sufficient to reduce the dusting index thereof.

4,270,956

METHOD FOR CONTROLLING WEIGHT OF SUGAR-CONTAINING SOLID SHAPES AND PRODUCT

Walter Vink, Purdys Station; Leonard Spooner, Port Chester, and Donald A. M. Mackay, Pleasantville all of N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Feb. 15, 1980, Ser. No. 121,945
Int. Cl.³ C13F *3/00*; A23G *3/00*
U.S. Cl. 127—29 **14 Claims**



1. A method for controlling distortion of and for controlling the weight and thus the size of sugar-containing solid pieces, which comprises controlling the amount of dextrans having a given molecular weight in the sugar-containing solid pieces to thereby reduce the weight and size of the sugar-containing solid pieces to a desired degree.

4,270,957

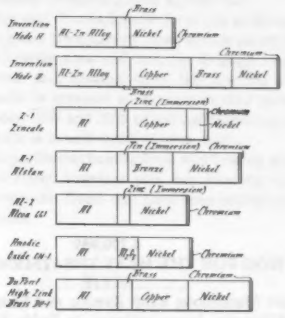
METHOD FOR CLEANING ALUMINUM ARTICLES

William A. Donakowski, Dearborn Heights, and John R. Morgan, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 803,200, Jun. 3, 1977, Pat. No. 4,157,941. This application Oct. 25, 1978, Ser. No. 954,800
The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.
Int. Cl.³ C23G *1/12, 1/22*
U.S. Cl. 134—2 **1 Claim**

1. A method of pretreating an aluminum article for plating, comprising:

(a) cleaning said aluminum article to be substantially free of oxide, said cleaning consisting of soaking the article in a first cleaning solution at 140°–180° F. for 1–4 minutes, said first cleaning solution containing 8 oz./gal. of water of a powder additive comprising 2.5–3.5% sodium metasilicate, 17.5–18.5% sodium pyrophosphate, and 31.0–32% sodium tetraborate;



(b) wash the article in a second solution at 110°–130° F., consituted the same as the first cleaning solution, by use of a power spray for 1–3 minutes at 16 psig;

(c) rinse the soaked and sprayed article with water for about 1 minute at room temperature;

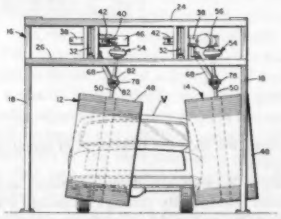
(d) dip the article by immersion in a third water solution for about 15 seconds consisting of 50% HNO_3 and then water rinse.

4,270,958

METHOD FOR BRUSHING VEHICLES

George T. Ennis, Playa del Rey, Calif., assignor to N/S Car Wash Enterprises, Inc., Sharon, Pa.

Division of Ser. No. 916,001, Jun. 15, 1978, Pat. No. 4,198,722, which is a continuation-in-part of Ser. No. 883,514, Mar. 6, 1978, Pat. No. 4,225,995. This application Sep. 7, 1979, Ser. No. 73,490
Int. Cl.³ B08B *1/04*
U.S. Cl. 134—6 **2 Claims**



1. A method for washing one or more of the front, side and rear surfaces of a vehicle as it moves relative to a vehicle washing apparatus, said vehicle washing apparatus having a frame, a brush support arm pivotably mounted on said frame and a brush which is coupled by a flexible plastic brush shaft to said brush support arm, said brush being initially positioned near the center line of the vehicle, the method comprising the steps of:

engaging the front end of the vehicle with said brush;

rotating said brush in a direction which causes said brush to walk along the surfaces of the vehicle due to the reactive force between the surfaces of the vehicle and said brush;

tilting said brush by flexing said flexible plastic shaft upon engagement with the front end of the vehicle;

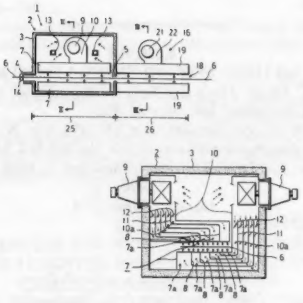
turning the brush around the front corner of the vehicle in response to the combined action of the reactive force between the brush and the surfaces of the vehicle and the flexing of said flexible plastic shaft; engaging the side of the vehicle with said brush.

4,270,959

METHOD FOR THE HEAT TREATMENT OF METAL STRIP

Masahiro Matsumoto; Kenji Kawate, and Hidenobu Jinnouchi, all of Nagoya, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Japan

Filed Aug. 3, 1979, Ser. No. 63,508
Claims priority, application Japan, Aug. 6, 1978, 53-95626
Int. Cl.[3] C22F *1/04;* C21D *9/46*
U.S. Cl. 148—153 5 Claims



1. A method, for the heat treatment of metal strip, comprising the steps of:

(i) passing a horizontally-disposed metal strip in floating condition horizontally through a heating zone, said floating condition and said heating being obtained by blowing heating gases towards the strip from a pair of plenum chambers arranged respectively above and below the strip, the quantities of gases blown towards a part of the length of the strip in which a thermal stress greater than an anti-buckling stress is produced in said heating zone being respectively larger for portions close to the central portion widthwise of the metal strip than for both edges widthwise of the metal strip, such that said central portion widthwise of the strip is higher in temperature than said both edges thereof,

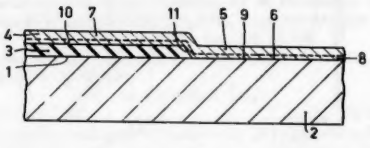
(ii) after said strip has passed through said heating zone, passing said strip in floating condition through a cooling zone.

4,270,960

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING A MONO-POLYCRYSTALLINE DEPOSITION ON A PREDEPOSITED AMORPHOUS LAYER

Lambertus J. M. Bollen, and Jan Goorissen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,754
Claims priority, application Netherlands, Oct. 23, 1978, 7810549
Int. Cl.[3] H01L *21/205, 21/441*
U.S. Cl. 148—175 9 Claims

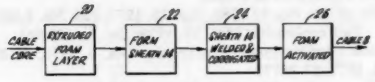


1. A method of manufacturing a semiconductor device comprising the steps of forming a masking layer on a part of a surface of a monocrystalline semiconductor body, and subjecting said surface to a gaseous phase epitaxial treatment so that an epitaxial layer is deposited on said surface, said epitaxial layer on uncovered portions of said surface being monocrystalline and said epitaxial layer on said masking layer being polycrystalline, characterized in that prior to said epitaxial treatment, an amorphous or polycrystalline layer is deposited both on said masking layer and on said uncovered portions of said surface at a temperature lower than that at which said epitaxial layer is deposited, said amorphous or polycrystalline layer portion on said uncovered portions of said surface changing into a monocrystalline state upon thermal treatment preceding said step of epitaxial treatment.

4,270,961
METHOD OF MANUFACTURING A SEALED CABLE EMPLOYING AN EXTRUDED FOAM BARRIER

John G. Faranetta, Rocky Hill, and Robert G. Feller, West Milford, both of N.J., assignors to The Okonite Company, Ramsey, N.J.

Filed Oct. 10, 1979, Ser. No. 83,540
Int. Cl.[3] H01B 13/14, 13/18, 13/22
U.S. Cl. 156—51 4 Claims

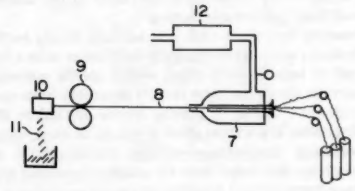


1. A method for producing sheathed, non-vapor propagating cable comprising the steps of extruding a layer of a foamable material around an insulated conductor, said foamable material being of the closed cell type after activation by the application of heat; forming an outer metal sheath about said insulated conductor and said foam; corrugating said outer metal sheath and applying heat to activate said foamable material and seal the space between said insulated conductor and said outer metal sheath.

4,270,962
PROCESS AND APPARATUS FOR THE PREPARATION OF BAR FORM FIBROUS MOLDING

Taizo Sugihara, Moriyamashi, and Hiromu Sonoda, Shigaken, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Nov. 6, 1979, Ser. No. 92,054
Claims priority, application Japan, Nov. 15, 1978, 53-140709
Int. Cl.[3] B29H 9/02
U.S. Cl. 156—180 8 Claims

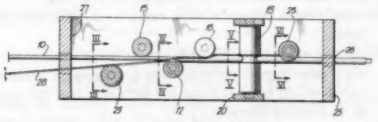


1. A process which comprises
(a) bringing together a plurality of separate fibers in the form of a fibrous bundle, at least 20% by weight of said fibers being heat adhesive composite fibers,
(b) transporting said fibrous bundle through an elongated transporting zone that has a cross sectional area which approximately corresponds to the cross sectional area of the fibrous bundle,
(c) introducing a stream of pressurized and heated gas into a heating zone, said heating zone surrounding said transporting zone so that the outlet end of said transporting zone is in open communication with the interior of said heating zone and the inlet end of said transporting zone communicates with the exterior of said heating zone,
(d) establishing a flow of said pressurized and heated gas through said transporting zone countercurrent to the movement of said fibrous bundle through said elongated transporting zone and then out of said transporting zone to a point outside of said heating zone, whereby the heated gas introduced into said heating zone will impart heat to said fibrous bundle both (1) by the indirect heat applied from points exterior of said elongated transporting zone and (2) by direct heat by the hot gas passing through the interior of said elongated transporting zone, said hot gas having a temperature of about 100° C.–250° C. and being under a pressure of about 0.5–10 kg/cm^2(G),
(e) transporting said fibrous bundle from the outlet aperture of said elongated transporting zone across an open space within said heating zone and then out through a die outlet aperture from said heating zone, the interval that said fibrous bundle is exposed to heating in said open space being between 10% and 30% of the entire interval that the fibrous bundle is in said heating zone, and
(f) withdrawing a fibrous bundle from said heating zone with the fibers adhered together into bar form by said heat adhesive composite fibers that have been activated by said heat treatment.

4,270,963
WRAPPING ARTICLES OF INDEFINITE LENGTH

Robert J. Howat, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 17, 1979, Ser. No. 76,298
Int. Cl.[3] B31F 1/00
U.S. Cl. 156—201 4 Claims



1. A method of wrapping an optical fibre of indefinite length comprising:
(a) providing a creasable wrapping tape having an adhesive on one surface;
(b) locating the tape with said one surface facing the fibre; and with the fibre at substantially ambient temperature,
(c) disposing the tape alongside the fibre and, solely by the use of at least one rolling and forming surface pressing onto the tape, bringing a first longitudinally extending portion of the tape into substantially intimate and adhering engagement with the fibre at a first part of contact;
(d) turning a second longitudinally extending portion of the tape laterally adjacent to the first portion towards and into substantially intimate and adhering contact with a peripheral surface part of the fibre extending circumferentially from the first part of contact by pressing said second portion solely between the peripheral surface part of the fiber and another rolling and forming surface substantially conforming to the peripheral surface part;
(e) repeating the turning process upon successive longitudinally extending portions of the tape to bring them into intimate and adhering contact with successive peripheral parts of the fibre, turning of the tape being in step-by-step manner from one longitudinally extending portion to another; and
(f) by the sole use of at least one further rolling and forming surface, overlapping side edges of the tape with the adhesive on the outer edge sticking the side edges together.

4,270,964

METHOD AND APPARATUS FOR REINFORCING A LAYER OF PLASTICS MATERIAL

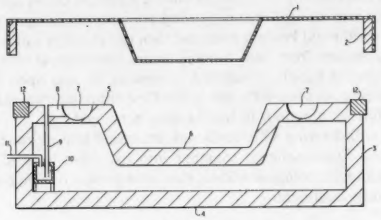
Peter J. Flaskett, Whitley Bay, England, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 23, 1979, Ser. No. 23,375

Claims priority, application United Kingdom, Mar. 29, 1978, 12226/78

Int. Cl.[3] B29C *17/00;* B32B *31/00*

U.S. Cl. 156—228 15 Claims



1. A method of reinforcing a layer of plastics material by means of an apparatus comprising a base with a support thereon, which support has a dished surface having a female configuration when viewed from the top bounded at least in part by a gutter having at least one channel communicating with at least one outlet provided in the body of said support, said outlet connected to vacuum means and at least one seal bounding said gutter and outlet, the plastics material being correspondingly shaped to said surface and gutter, the method comprising the steps of:

(a) applying the layer of plastics material to the support,

(b) applying at least one layer of fibrous reinforcement to at least the dished area of the plastics material,

(c) applying a polymerizable resin to the fibrous reinforcement,

(d) laying at least one flexible plastic membrane, correspondingly pre-shaped to the surface and having a male configuration when viewed from the bottom, over the support so as to overlap the seal,

(e) drawing air from the outlet so as to form an at least partial vacuum between the membrane and the surface and to impregnate the reinforcement with the resin,

(f) polymerizing the resin, or allowing it to polymerize, and resin surplus to that required to impregnate the fibrous reinforcement being received by the gutter in the plastics material, and

(g) removing the flexible membrane from the resin impregnated reinforcement.

9. An apparatus wherein fibrous reinforcement may be applied to a layer of plastics material and bonded thereto by the polymerization of non-foamble resin distributed through the reinforcement, which apparatus comprises:

(i) a base bearing

(ii) a support having a dished surface and having a female configuration when viewed from the top bounded at least in part by a gutter having at least one channel communicating with at least one outlet provided in the body of said support, said outlet connected to vacuum means, the support accepting in use the layer of plastics material which has a shape corresponding to the surface and gutter, the gutter in the plastics material being for receiving any resin surplus to that required to impregnate the fibrous reinforcement,

(iii) at least one flexible plastics membrane positioned above said support on a moveable frame and correspondingly pre-shaped to the surface of said support and which, when laid over the support, will overlap said gutter and a seal (iv), said membrane having a male configuration when viewed from the bottom, and said membrane removed from the bonded fibrous reinforcement after each molding operation;

(v) at least one seal bounding the gutter and outlet of the support so that when air is drawn from the outlet an at least partial vacuum is formed between the membrane and the surface.

4,270,965

PRODUCTION OF STERILE PACKAGES

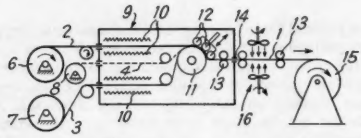
Roland M. Torterotot, "Le Petit Chaillot", 78730 Rochefort-en-Yvelines, and Jean R. L. Nasica, 19, avenue Emile Deschanel, 75007 Paris, both of France

Division of Ser. No. 837,750, Sep. 29, 1977, Pat. No. 4,160,852. This application Mar. 19, 1979, Ser. No. 21,961

Claims priority, application France, Oct. 6, 1976, 76 30144; Jun. 1, 1977, 77 16772

Int. Cl.[3] B29C *19/00;* B32B *3/02*

U.S. Cl. 156—244.11 15 Claims



1. A process for the manufacture of a multi-layered composite packaging laminate which is internally sterile and which is intended for the sterile packing of products, preferably in liquid and/or paste form, between layers of the laminate but which is without such products between layers of the laminate, said laminate comprising at least two individual strips, one of which comprises thermoplastic material and each of which being made of a material which is impermeable to at least some fluids, said strips being adhered together in a fluid-tight manner at least at their edges, whereby the adjacent surfaces of the two strips lie in opposed, facing relationship, and said adjacent surfaces being sterile and being readily separable from each other under the action of pulling forces applied to the individual strips in divergent directions at a temperature which is, at most, equal to the softening temperature of the thermoplastic material, said process comprising:

advancing said strips with said surfaces facing each other;

adhesively securing the strips to each other with a fluid-tight seal at least at their edges with a sterile material which permits the strips to be readily separable from each other under the action of pulling forces applied in divergent directions at a temperature which is, at most, equal to the softening temperature of the thermoplastic material, whereby the strips may be readily separated after they have been secured together to permit enclosing a product by at least one of said strips; and

sterilizing at least said surfaces during the advance of the strips so that the surfaces are sterile when the adhesive securing of the strips to each other is completed.

4,270,966

PROCESS FOR PRODUCING A SHOE

Sueo Kihara, Habikino, Japan, assignor to Kihara Sangyo Kabushiki Kaisha, Osaka and Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, both of, Japan

Division of Ser. No. 25,689, Mar. 30, 1979. This application Aug. 8, 1979, Ser. No. 64,701

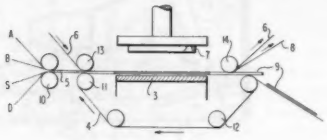
Claims priority, application Japan, Mar. 31, 1978, 53-36739

Int. Cl.[3] A43B *13/30;* B32B *31/00;* B29C *19/02;* B32B *31/20*

U.S. Cl. 156—251 1 Claim

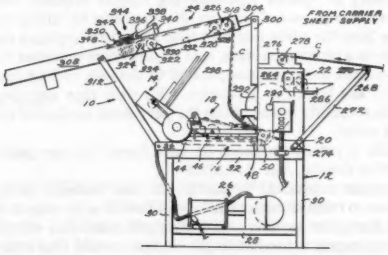
1. A process for producing a shoe insole which comprises: laminating (A) a coarse mesh-like woven cloth backing made of monofilaments of a vinylidene chloride-type polymer, (B) a honeycomb-woven cloth intermediate layer made of monofila-

ments of said vinylidene chloride-type polymer, (S) a sheet prepared by coating a latex containing activated carbon powder, copper powder and magnetic powder on a non-woven cloth made of staple fibers of said vinylidene chloride-type polymer and/or a vinyl chloride-type polymer and heat-treating the coated cloth, and (D) a fine-woven cloth surface layer made of monofilaments of said vinylidene chloride-type polymer in order to form a laminate, placing an insulating buffering material comprising a laminate of a paper sheet having a thickness of about 0.1 to 0.5 mm and a polyester film having a thickness of about 0.02 to 0.1 mm on a flat plate-like lower



electrode of a high-frequency welding machine, placing said laminate on top of the buffering material, superimposing a polyester film having a thickness of 0.01 to 0.02 mm on said laminate, causing an upper electrode whose peripheral portion is sharpened by inclining projections at the lower end thereof to descend toward the lower electrode 3 to press the buffering material, laminate and polyester film between the two electrodes, passing a high frequency current across the two electrodes to simultaneously weld and cut off the peripheral portion of the laminate, and then exposing said product to a magnetic field to magnetize it.

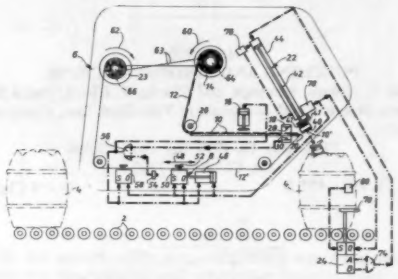
4,270,967
GLUING MACHINE
Clendon W. Cone, 22 Haviland Ave., Glens Falls, N.Y. 12801
Filed Mar. 12, 1979, Ser. No. 19,332
Int. Cl.³ B65H *9/14, 29/66, 29/68*
U.S. Cl. 156—299 **22 Claims**



6. A process as in claim 6 wherein the documents are moved by at least two groups of spaced apart drive belts where a first group moves at a first rate and a second group moves at a second faster rate.

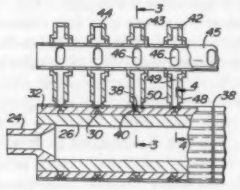
4,270,968
LABELLING DEVICE
Windfried Dudzik, Drosselweg 13, 7441 Neckartailfingen, and Joachim Dudzik, Vor dem Klingler 1, 7440 Nürtingen, both of Fed. Rep. of Germany
Filed Jun. 2, 1980, Ser. No. 127,313
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909655
Int. Cl.³ B32B *1/00*
U.S. Cl. 156—361 **12 Claims**

1. Labelling device, with a ribbon having self-adhesive labels removably arranged therein in spaced relationship and which can be pulled from a pull-off roll over a dispensing edge, an automatically tripped advancing mechanism arranged downstream of the dispensing edge in the advancing direction and movable in the forward advancing direction and in opposite return direction, a sensing device for controlling said advancing mechanism in response to control markings, such as holes, in said label ribbon, and a take-up roll for the empty label ribbon wherein the improvement comprises that said advancing mechanism includes a ribbon clamping device movable a greater distance in the advancing direction than the spacing between labels in the ribbon and holds the ribbon during the forward advancing motion and is open during the return mo-



tion, a switching member is located in the path of movement of and is actuated by said mobile ribbon clamping device and limits the movement of said ribbon clamping device in the forward advancing direction, an OR-logic circuit having inputs arranged to receive the output signals of said switching member and said sensing device through which output signals it is possible to trip the opening of said mobile ribbon clamping device, and a ribbon tensioning mechanism connected to said take-up roll acting in winding direction and a return stop for said take-up roll.

4,270,969
FINGERLESS SINGLE FACER
Lawrence R. Kelley, Philadelphia, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.
Filed Feb. 20, 1980, Ser. No. 122,952
Int. Cl.³ B31F *1/28*
U.S. Cl. 156—473 **6 Claims**



5. In a single facer machine having first and second corrugating rolls provided with longitudinally extending meshing flutes for corrugating a web of material passing therebetween, and suction means for retaining the corrugated web on approximately one-half the perimeter of said second roll, the improvement comprising:

a. said second roll having a central hollow core for receiving a heated fluid,

b. a sleeve surrounding and secured to said hollow core, means defining a plurality of circumferential grooves at spaced locations along the interface of said core and sleeve, said sleeve having a plurality of spaced annular slots in the perimeter thereof, the longitudinally extending flutes of the second roll being on the perimeter of said

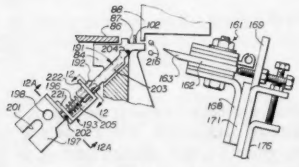
sleeve, said sleeve having a plurality of passages extending from each of said annular slots to one of said grooves.

c. said suction means applying suction to said second corrugating roll by way of said grooves, slots and passages to hold the corrugated web on said one-half of the perimeter of said second corrugating roll, said suction means including a plurality of hoods disposed diametrically opposite said one-half perimeter, said hoods having edges extending into sealing grooves on the outer periphery of said second corrugating roll, and a suction manifold communication with each of said hoods.

4,270,970
PUNCHING AND BINDING MACHINE

Elmer G. Szanto, Saratoga, and Charles J. Ulrich, Santa Barbara, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Filed May 15, 1980, Ser. No. 149,984
Int. Cl.³ B32B *1/00*
U.S. Cl. 156—477 B **4 Claims**



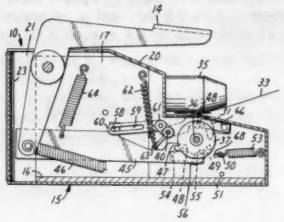
1. An apparatus for binding apertured sheets together using a first strip, a plurality of thermoplastic studs projecting from and spaced longitudinally along said first strip and a second strip formed with holes spaced longitudinally of said second strip at intervals complementary to said studs, said apparatus being of the type having a frame having a pair of spaced sides and a platen formed to receive said second strip and to support said sheets with their apertures aligned with said holes with said first strip above said sheets with said studs extending through said apertures and said holes and protruding below said second strip, means for severing said studs to length and heating the studs of said studs,

the improvement which comprises a transverse, slanted channel, means for moving said channel from an inoperative position upwardly-rearwardly to an operative position, said channel formed with first non-circular holes in its lower flange and with second non-circular holes in its upper flange, a plurality of fingers detachably held in said channel, each said finger having a first non-circular cross-section at a first end of said finger complementary to said first hole, each said finger having a first non-circular portion at a first end dimensioned to fit through said first hole when in one position and to lock behind said lower flange when said finger is turned approximately 90°, a first round portion above said first non-circular portion and dimensioned to turn in said first hole, a second non-circular portion above said first round portion dimensioned to slide in said second hole and when in said second hole to restrain rotation of said finger, a second round portion above said second non-circular portion dimensioned to turn in said second hole and an operative portion above said second round portion and a spring surrounding part of each said finger, said spring bearing against said second flange and said second non-circular portion whereby when said finger is inserted in said holes and twisted 90° said finger is captured in said channel, said spring permit said finger to yield when encountering resistance and restore said finger to projected position when resistance to movement terminates.

4,270,971
APPLICATOR FOR A DOUBLE COATED TAPE STRIP

Walter C. Pearson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 17, 1979, Ser. No. 85,726
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—510 **1 Claim**



1. A definite length tape applicator for applying cut lengths of double-coated tape comprising

a frame,

first means on said frame for supporting a convolutely wound roll of double-coated pressure-sensitive adhesive tape for rotation about an axis,

a feed roller mounted on an axis parallel to the axis of said first means for the roll of tape and comprising

a plurality of spaced circular disc-like members, and

an axially spaced drive wheel for said feed roller,

said feed roller having a plurality of circumferentially spaced notches extending generally radially of said peripheral surfaces of said disc-like members,

a knife pivotally mounted on said frame and movable toward and away from said feed roller for cutting a tape wrapped upon said feed roller,

second means biasing said knife to a position away from said feed roll,

a plurality of spaced tape-applying fingers disposed one between each pair of said disc-like members for lifting the tape from the surface of said feed roller and applying the same to a receptor surface, said fingers being mounted for movement about an axis parallel to the axis of said feed roller and biased to a position with their tape engaging surface radially inward from the peripheral surface of the feed roller,

a handle pivotally mounted on said frame for movement relative thereto, and

third means connected to said handle and movable in response to relative movement of said handle with respect to said frame for moving said knife against the bias of said second means to sever a length of tape on said feed roller drawn from said supply of tape, for advancing said fingers from between said disc-like members to a position lifting said tape from said feed roller; and for rotating said feed roll upon return of said handle to said original position.

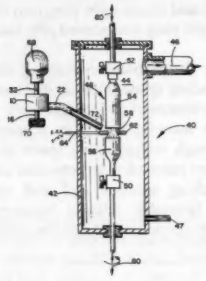
4,270,972
METHOD FOR CONTROLLED DOPING SEMICONDUCTOR MATERIAL WITH HIGHLY VOLATILE DOPANT

Allen G. Crouse, Tustin, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 31, 1980, Ser. No. 135,385
Int. Cl.³ C30B *13/10, 13/12*
U.S. Cl. 156—605 **4 Claims**

1. A method of doping semiconductor material with a highly volatile dopant in a float-zone crystal grower, the crystal grower comprising a gas impermeable housing, an induction heating coil disposed within the housing, and means for transporting a rod of the semiconductor material through the coil, said method comprising the steps of:

(a) disposing a holder for storing solid pieces of said dopant outside the housing, wherein said holder comprises a rotatable cylinder having a plurality of distinct chambers;
(b) providing feed means for propelling the dopant from one of said chambers through an exit port of said holder and into the housing in the vicinity of the coil whereby said dopant may enter a melted zone of said rod of semiconductor material;
(c) distributing a plurality of solid pieces of said dopant into said chambers;



(d) rotating said cylinder until a selected chamber is positioned adjacent said exit port;
(e) delivering inert gas under pressure into the interior of said holder and into said selected chamber;
(f) expelling the dopant from said selected chamber through said feed means into the melted zone of said rod of semiconductor material;
(g) rotating said cylinder until a different selected chamber is positioned adjacent said exit port; and
(h) repeating steps (e) through (g) until said rod of semiconductor material is doped.

4,270,973

GROWTH OF THALLIUM-DOPED SILICON FROM A TIN-THALLIUM SOLUTION

Joseph L. Schmit, Hopkins, and M. Walter Scott, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 900,447, Apr. 27, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,738
Int. Cl.³ C30B *19/02*
U.S. Cl. 156—605 **5 Claims**

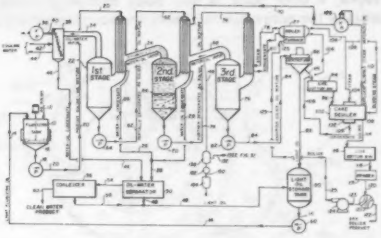
1. A method for epitaxially growing a thallium-doped silicon crystal which exhibits an infrared photoconductive response from a metallic solution, comprising the steps of:
heating and melting a mixture of tin and thallium in an ampoule to thereby provide a liquid metal solvent of tin and thallium;
providing at a first location in said solvent a silicon source;
placing at a second location separate from the first location a silicon seed crystal; and,
providing a temperature gradient in said solution from the silicon source first location in said solution to said second location in said solution with the temperature of the solution at said silicon source first location being hotter than at said second location whereby a thallium-doped silicon crystal grows at said second location.

4,270,974

PROCESS AND APPARATUS FOR RECOVERING CLEAN WATER AND SOLIDS FROM AQUEOUS SOLIDS

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

Filed Sep. 1, 1976, Ser. No. 719,515
Int. Cl.³ B01D *1/14*
U.S. Cl. 159—16 S **24 Claims**



15. An apparatus for recovering clean water and substantially dry, fluidizing oil-free solids from aqueous solids dehydrated in a light fluidizing oil medium, said apparatus comprising (1) a tank adapted to receive a stream of said aqueous solids and provided with a stirring or mixing mechanism, (2) a light fluidizing oil reservoir, (3) means for transmitting light fluidizing oil from said light oil reservoir to said tank wherein said light fluidizing oil and aqueous solids may be mixed, (4) an evaporator, (5) a conduit extending from said tank to said evaporator wherethrough may flow a stream of aqueous solids admixed with light fluidizing oil from said tank into the evaporating region of said evaporator, (6) a condenser, (7) a conduit extending from said evaporator to said condenser through which may flow a mixture of water vapor and light oil vapor formed as a result of heating of said aqueous solids and light fluidizing oil mixture, (8) an oil-water separating means, (9) a conduit extending from said condenser to said oil-water separating means wherethrough may flow a mixed condensate of water and light oil, (10) means for separately withdrawing light oil and clean water from said oil-water separating means, (11) a conduit extending from said withdrawing means to said light fluidizing oil reservoir wherethrough may flow a stream of light oil, (12) a liquid-solid separating means, (13) a conduit extending from said evaporator to said liquid-solid separating means wherethrough may flow a stream of a slurry of substantially anhydrous solids in light fluidizing oil, (14) a deoiler means, (15) a conduit extending from said liquid-solid separating means to said deoiler means wherethrough may flow a stream of solids carrying residual light fluidizing oil, and (16) a conduit extending from said liquid-solid separating means to said light fluidizing oil reservoir wherethrough may flow a stream of light oil.

4,270,975

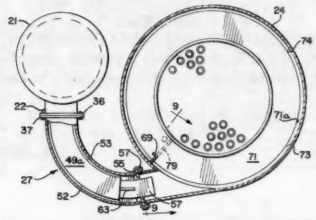
LIQUID-VAPOR SEPARATION DEVICE AND METHOD

Richard C. Bennett, Park Forest, Ill., assignor to Whiting Corporation, Harvey, Ill.

Filed Nov. 27, 1979, Ser. No. 97,659
Int. Cl.³ B01D *1/06*
U.S. Cl. 159—27 A **17 Claims**

8. An improved evaporator apparatus, comprising a generally cylindrical body defining a shell side in said apparatus, a plurality of tubes mounted in said apparatus extending through said shell side, a tube side inlet in said apparatus communicating with one end of said tubes, a tube side outlet in said apparatus communicating with the other end of said tubes, means for passing a liquid feed to be heated into said inlet and from said inlet through said tubes, an inlet and outlet in said shell side for passing a heating medium through said shell side in surround-

ing relation to said tubes for heating and at least partially vaporizing at least a portion of a liquid feed which is passed through said tubes to produce a liquid-vapor mixture which is discharged through said tube side outlet, a liquid-vapor separation device directly connected to said tube side outlet, said liquid-vapor separation device including a generally horizontally disposed elongated body which defines an arcuate passageway, an inlet at one end of said body for receiving said liquid-vapor mixture, an end wall at the other end of said body, an outlet in said end wall for discharge of a substantially liquid-free vapor, a floor plate in said body extending along and substantially the entire extent of said arcuate passageway, said



floor plate being spaced above a bottom wall of said elongated body to define a liquid collection chamber in said body between the floor plate and the bottom wall of said elongated body, said floor plate being spaced away from at least one side wall of said elongated body a sufficient distance to permit drainage of liquid droplets which collect on said side wall into said liquid collection chamber, a liquid outlet in said bottom wall for removal of liquid which accumulates in said liquid collection chamber, a skirt axially extending into said passageway from said end wall in surrounding relation to said outlet, and baffle means in surrounding relation to said skirt for substantially eliminating vapor swirl adjacent said outlet.

4,270,976

METHOD OF PRODUCING PEROXIDE BLEACHED PULP

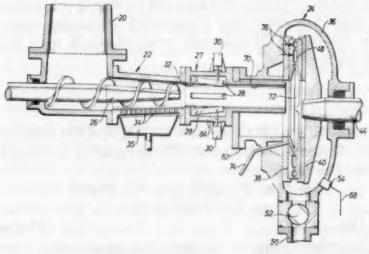
Åke O. Sandstrom, Täby; Bo G. Falk, Järfälla, and H. S. Ingemar Bystedt, Daderyd, all of Sweden, assignors to Defibrator AB, Stockholm, Sweden

Continuation of Ser. No. 852,542, Nov. 17, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,614

Claims priority, application Sweden, Nov. 23, 1976, 7613088; Mar. 18, 1977, 7703137

Int. Cl.³ D21B *1/16*

U.S. Cl. 162—26 **7 Claims**



1. In the method of producing peroxidebleached pulp in a defibrating apparatus in which ligno-cellulosic raw material such as wood chips impregnated with a peroxide-containing bleaching solution is disintegrated in a grinding space defined between a pair of grinding discs which discs rotate relatively to one another under axial pressure within a closed defibrator housing in an environment of pressurized steam at a temperature above 100° C., the raw material being compressed at a temperature below 100° C., while being conveyed into an inlet to the defibrator housing and accelerated radially outwards in the grinding space by the centrifugal force created by the rotating discs, the resultant grist being discharged from the defibrator housing through valve means which are controlled to maintain a predetermined pressure within the housing, the improvement comprising:

(a) compressing the raw material into a steam-tight plug at the inlet to said defibrator housing while advancing it into said defibrator housing;

(b) breaking up said steam-tight plug into fiber bundles after said steam-tight plug has entered into said grinding space; and

(c) introducing the peroxide-containing bleaching solution into said grinding space without substantial contact with the steam environment in the defibrator housing to react with the raw material during its accelerated radial progression through said grinding space so as to provide a relatively short reaction time betweeen said peroxide-containing bleaching solution and said raw material for achieving a favorable relation between the bleaching action and the decomposition of the peroxide.

4,270,977

PROCESS FOR PREPARING WATER SORPTIVE PRODUCTS

Daniel F. Herman, Princeton, and Uno Kruse, Neptune, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,207

Int. Cl.³ D21H *3/44;* D21D *3/00;* C08F *220/20*

U.S. Cl. 162—168 R **9 Claims**

1. A process for preparing a water sorptive product which comprises:

(1) forming an aqueous suspension comprising a slurry of a potentially water swellable, water-insoluble polymer component and a fibrous component in water wherein the polymer component comprises the reaction product of:

(a) from about 15% to about 50% by weight of an olefinically-unsaturated carboxylic acid;

(b) from about 49.07% to about 82% by weight of an alkyl acrylate wherein the alkyl group has from 1 to 6 carbon atoms; and

(c) from about 0.03% to about 3.0% by weight of a cross-linking agent, said reaction product having carboxyl groups present therein which when coverted to their salt form maintains the polymer water-insoluble and imparts the capability of said polymer component of sorbing water upon contact therewith; and

wherein the fibrous component comprises at least 50% cellulose material, and the weight ratio of said polymer component to said fibrous component is controlled to from about 90:10 to about 5:95;

(2) forming a composite product from said suspension;

(3) partially drying said composite product to reduce the moisture content thereof to between about 3 and about 25%, by weight, based on the weight thereof;

(4) contacting said partially dried composite product with an amount of an aqueous solution of a base sufficient to achieve a degree of salting of the polymer component of said composite product of from about 100 to about 120% and thereby netralize the carboxylic groups present thereon and in a manner sufficient to prevent the weight ratio of the dry neutralized composite product to water sorbed therein from exceeding 1:10 without solubilizing the polymer salt; and

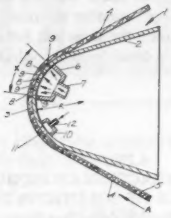
(5) drying said neutralized composite product to reduce the moisture content thereof to not greater than about 25% by weight.

4,270,978

POSITIVE PRESSURE FELT DEWATERING AND CLEANING DEVICE AND METHOD

Eugene Fioravanti, Averill Park, N.Y., assignor to Huyck Corporation, Wake Forest, N.C.

Filed Jul. 30, 1979, Ser. No. 62,451
Int. Cl.[3] D21F *1/32;* B08B *1/02*
U.S. Cl. 162—199 7 Claims



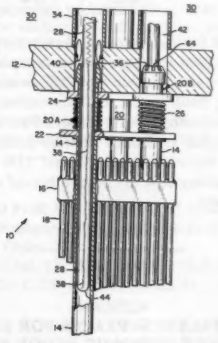
1. A positive pressure dewatering device for papermaker's felts comprising a hollow shoe having a rounded nose adapted to contact and deflect the felt being dewatered, said nose having a radius of from about 2" to about 4" and an arc which is greater than 90° but less than 180°, an elongated lengthwise orifice in said nose having an effective width of from about 1" to about 4", and means within said shoe in communication with said orifice for discharging air under pressure therethrough.

4,270,979

PARALLEL FLOW COLLAR FOR REDUCING VIBRATION OF A ROD WITHIN A DIFFUSER

Frank Bevilacqua, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 18, 1978, Ser. No. 970,694
Int. Cl.[3] G21C *3/30, 7/08*
U.S. Cl. 176—78 12 Claims



1. A flow collar for reducing the flow induced oscillation of a rod within a tube that abruptly opens into a diffuser region downstream of the rod tip, comprising:

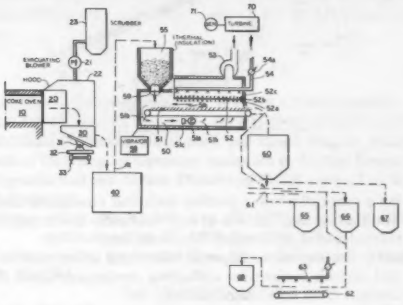
a sleeve rigidly attached with respect to the tube, the sleeve circumferentially surrounding the rod at the diffuser entrance and extending upstream thereof, for partitioning the flow entering the diffuser into a relatively low velocity flow immediately adjacent to the rod and a higher flow entering the diffuser laterally of and in a direction substantially parallel to the rod.

4,270,980

METHOD FOR RECOVERING AND UTILIZING HEAT OF COKE-OVEN GAS

Teruo Shimotsuma; Kazuo Kunioka; Hiroaki Nishio, all of Yokohama, and Yasuo Okuyama, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1979, Ser. No. 35,457
Claims priority, application Japan, May 26, 1978, 53-62183
Int. Cl.[3] C10B *49/02, 51/00, 55/02, 57/10*
U.S. Cl. 201—28 3 Claims



1. A method for recovering and utilizing heat of a coke-oven gas, which comprises the steps of:

introducing at least a part of a high-temperature coke-oven gas generated from a coke oven battery and containing vaporized coal tar, vaporized low boiling point substances and dust into a drying and preheating chamber, while supplying a blended raw material coal fine to be charged into coking ovens of said coke-oven battery into said drying and preheating chamber;

drying and preheating said coal fine through heat exchange with said coke-oven gas in said drying and preheating chamber, while causing most of the vaporized coal tar contained in said coke-oven gas to condense and deposit onto the particle surfaces of said coal fine, thereby recovering and utilizing sensible heat and condensation heat of said coke-oven gas and substances contained therein; and,

charging said coal fine, dried and preheated in said drying and preheating chamber and onto the particle surfaces of which coal tar has deposited, into coking ovens of said coke oven battery.

4,270,981

SOLAR DISTILLATION APPARATUS

Virgil Stark, New York, N.Y., assignor to North American Utility Construction Corp., New York, N.Y.

Filed Jun. 13, 1978, Ser. No. 915,001
Int. Cl.[3] C02F *1/14*
U.S. Cl. 202—172 31 Claims

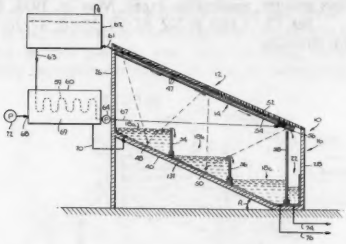
1. Apparatus for distilling a liquid such as water using solar energy comprising:

means for containing the liquid to be distilled;

lens means disposed above said containing means for concentrating the solar energy in said liquid to be distilled;

elongated conduit means disposed between said lens means and said containing means for condensing evaporated liquid thereon, said conduit means being transparent at least in part so as to allow solar energy concentrated by said lens means to pass therethrough and reach said containing means, said conduit means including means for admitting fluid to and withdrawing fluid from said conduit means such that a fluid can be passed through said conduit means, said conduit means including a substantially smooth surface disposed above the containing means and positioned such that rising liquid vapor impinges upon

said surface and is condensed thereon, said smooth surface being operative to transmit at least in part the heat of condensation released by evaporated liquid condensing thereon to the interior of said conduit means where such heat may be absorbed by the fluid in said conduit means and thereby may be recovered, said smooth surface having a vertically lower portion such that condensed liquid flows along said surface to said vertically lower portion thereof and is discharged therefrom, and



liquid collecting means disposed below said lower portion of said smooth surface for collecting condensed liquid discharged from said lower portion.

4,270,982

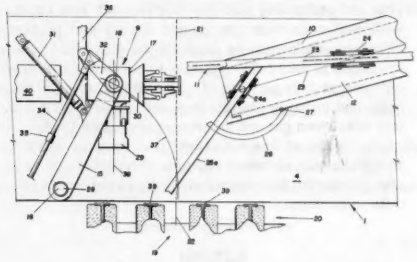
TURRET TYPE, SINGLE SPOT COKE OVEN DOOR MACHINE AND GUIDE

Ira Lakin, Volant, and Gilbert Blair, Coraopolis, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Sep. 22, 1980, Ser. No. 189,085

Int. Cl.[3] C10B *25/14, 43/04, 33/14*

U.S. Cl. 202—241 **21 Claims**



1. An apparatus for servicing a coke oven battery comprising:

(a) a car mounted on wheels for movement along its longitudinal axis in a direction substantially parallel to the face of a coke oven battery;

(b) at least one support member mounted at one end about a primary vertical axis located in a fixed position on the car for pivotal movement in a horizontal plane about said primary axis;

(c) a turret having affixed thereto at least one coke oven servicing device mounted at the free end of said at least one support member for rotational movement in a horizontal plane about a secondary vertical axis such that pivotal movement of said at least one support member about the primary axis extends and retracts the turret toward and away from a selected coke oven in the battery along an arc defined by the pivotal movement of said at least one support member;

(d) means to pivot said at least one arm about the primary vertical axis; and

(e) means for rotating said turret about the secondary vertical axis in coordination with the pivotal movement of said at least one support member about the primary axis, said means including therein a means for rotating said turret about the secondary vertical axis independently of the pivotal movement to provide a first selected rotational position relative to the selected coke oven in which the servicing device is presented to the coke oven, said first selected position being maintained during at least part of the travel of the turret along the arc by said coordinating means for rotating said turret wherein for a first pivotal position of the support member the turret is adjacent the oven face for servicing the same and for a second pivotal position the turret is distal from the selected oven.

4,270,983

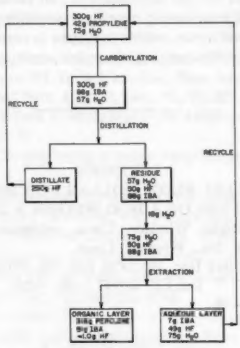
LIQUID-LIQUID EXTRACTION OF ISOBUTYRIC ACID FROM AQUEOUS HF SOLUTIONS THEREOF

Bhupendra C. Trivedi, Worthington; Dace Grote, and Thomas O. Mason, both of Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 4, 1980, Ser. No. 118,359

Int. Cl.[3] C07C *51/44, 51/48*

U.S. Cl. 203—43 **4 Claims**



1. In a method for the recovery of isobutyric acid prepared by the carbonylation of propylene in a reaction medium of about 80% hydrogen fluoride and 20% water; the improvement comprising distilling the resultant carbonylation reaction mixture to remove anhydrous hydrogen fluoride to the extent whereby the residual hydrogen fluoride content of said reaction medium is between about 60 and 35% and thereupon extracting the isobutyric acid content thereof with an immiscible organic solvent.

4,270,984

CATALYST SURFACES FOR THE CHROMOUS/CHROMIC REDOX COUPLE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Jose D. Giner, and Kathleen J. Cahill, both of Waltham, Mass.

Division of Ser. No. 964,754, Nov. 29, 1978, Pat. No. 4,192,910. This application Jul. 27, 1979, Ser. No. 61,555

Int. Cl.[3] H01M *10/44*

U.S. Cl. 204—2.1 **18 Claims**

1. A method of making a REDOX cell of the type having an ion permeable membrane separating anode and cathode fluids comprised of water, HCl and chromium and iron chloride

salts, respectively, and including the additional steps of adding lead chloride to the anode fluid and then charging the cell to

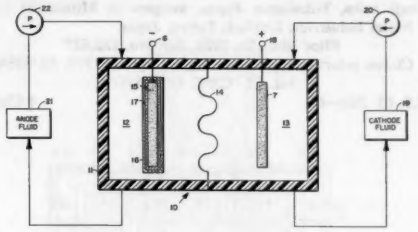


plate lead onto an electrically conductive inert electrode disposed in the anode fluid.

4,270,985

SCREEN PRINTING OF PHOTOPOLYMERIZABLE INKS

Melvin A. Lipson, Fullerton, and Dale W. Knoth, Norwalk, both of Calif., assignors to Dynachem Corporation, Tustin, Calif.

Continuation of Ser. No. 927,065, Jul. 21, 1978, abandoned, which is a continuation of Ser. No. 858,312, Dec. 7, 1977, abandoned, which is a continuation of Ser. No. 663,048, Nov. 18, 1975, abandoned, which is a division of Ser. No. 473,236, May 24, 1974, Pat. No. 3,953,214. This application Apr. 12, 1979, Ser. No. 29,249

Int. Cl.[2] B05D *3/06*

U.S. Cl. 204—15 **14 Claims**

1. A process for treating a substrate which comprises:

A. Screen printing on the surface of the substrate a solvent free liquid photopolymerizable ink which comprises:

(i) 25 to 50% by weight of a photopolymerizable monomeric material containing at least 20 weight percent hydroxyalkyl acrylate or methacrylate;

(ii) 20 to 60% by weight of a polyester binder having a molecular weight of from 500 to 50,000;

(iii) 5 to 10% by weight of a free radical generating addition polymerizing initiating system;

said ink having a viscosity of from 5,000 to 200,000 centipoises, an acid number of from 0 to 120 and a thixotropic index of from 1.00 to 4.00; thereby leaving on the surface of said substrate an image corresponding to the image on said silk screen;

B. Exposing the photopolymerizable ink film on said substrate to actinic radiation to cure said ink and to form a resist;

C. Permanently modifying the exposed areas on the substrate which are unprotected by the resist.

4,270,986

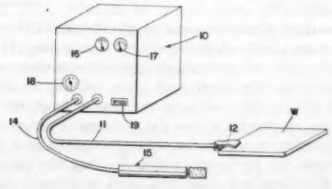
METHOD FOR SOLDERING ALUMINUM

Gary W. Smith, Brookpark, Ohio, assignor to Sifco Industries, Inc., Cleveland, Ohio

Filed Jul. 12, 1979, Ser. No. 56,832

Int. Cl.[3] C25F *1/00, 3/00*; C25D *5/44*

U.S. Cl. 204—48 **9 Claims**



1. A method of soldering aluminum with soft solder which includes the steps of removing surface soil from the aluminum surfaces to be soldered, subjecting the surfaces to be soldered to an electrocleaning operation by making the surface the cathode in an electrolytic circuit embodying an alkaline electrolyte, electroetching the electrocleaned surface by making the surface the anode in an electrolytic circuit embodying an acid electrolyte and brush electroplating a layer of nickel having a thickness of from about 0.000030 inch to about 0.000050 inch on the previously cleaned and etched aluminum surfaces and thereafter soldering the surfaces by applying a soft solder and a non-corrosive flux thereto, and heating the solder sufficiently to fuse the same on the nickel-plated surfaces.

4,270,987

ACID GALVANIC NICKEL BATHS CONTAINING N-(2,3-DIHYDROXYPROPYL)-PYRIDINIUM SULFATES

Wolf-Dieter Willmund, Düsseldorf, and Heinz Wagner, Hilden, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holth ausen, Fed. Rep. of Germany

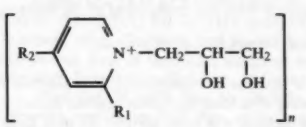
Division of Ser. No. 66,568, Aug. 15, 1979, abandoned. This application Feb. 27, 1980, Ser. No. 125,246

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836581

Int. Cl.[3] C25D *3/18*

U.S. Cl. 204—49 **5 Claims**

1. An aqueous acid galvanic nickel bath composition having lustering and wetting agents, characterized in that the bath contains as a leveling agent an N-(2,3-dihydroxypropyl)-pyridinium sulfate of the formula



wherein R_1 and R_2, which may be the same or different, are a hydrogen atom or a methyl radical; X is the acid radical $SO_4^=$ or HSO_4^-; and n is a digit sufficient to satisy the valence of X.

4,270,988

CADMIUM PLATING BATHS AND METHODS FOR ELECTRODEPOSITING BRIGHT CADMIUM DEPOSITS

William E. Eckles, Cleveland Heights, and Valerie M. Canaris, Parma, both of Ohio, assignors to Rohco, Inc., Cleveland, Ohio

Filed Sep. 24, 1979, Ser. No. 78,139

Int. Cl.[3] C25D *3/26*

U.S. Cl. 204—50 R **12 Claims**

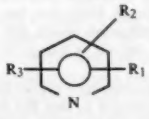
1. An aqueous electroplating bath for the electrodeposition of cadmium comprising

(a) cadmium ions

(b) a free acid

(c) at least one anionic compound selected from the group consisting of aromatic or aliphatic sulfonic acids, aliphatic sulfates, or bath-soluble salts thereof, and

(d) at least one pyridine brightener composition having the formula



wherein R_1, R_2 and R_3 are each independently hydrogen,

alkyl, alkoxy, alkene, mercapto, amino, halogen, aryl, arylalkyl, aminoalkyl, hydroxy, hydroxyalkyl, cyano, dialkylamide, aldoxime, or pyrolidinyl groups and the corresponding N-oxide compounds.

4,270,989

CADMIUM PLATING BATHS AND METHODS FOR ELECTRODEPOSITING BRIGHT CADMIUM DEPOSITS

William E. Eckles, and Charles W. McFarland, both of Cleveland Heights, Ohio, assignors to Rohco, Inc., Cleveland, Ohio

Filed Dec. 21, 1979, Ser. No. 106,094
Int. Cl.[3] C25D *3/26*
U.S. Cl. 204—50 R 28 Claims

1. An aqueous electroplating bath for the electrodeposition of cadmium comprising
(a) cadmium ions,
(b) a free acid, and
(c) at least one phosphate, carboxylate, or sulfate compound containing one or more alkylene oxide groups and wherein the alkylene group contains 2 or 3 carbon atoms, and at least one of the alkylene oxide groups in the sulfates is attached to an aryl group.

4,270,990

ACIDIC ELECTROPLATING BATHS WITH NOVEL SURFACTANTS

Jaan J. Fong, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 7, 1979, Ser. No. 46,378
Int. Cl.[3] C25D *3/22, 3/32, 3/38*
U.S. Cl. 204—55 R 2 Claims

1. An acidic electroplating bath comprising metal ions, an electrolyte, and at least one compound of the formula:

$$R—Ar—O—(C_3H_6O)_n—(C_2H_4O)_m—H$$

wherein Ar is benzene or naphthalene; R is selected from the group consisting of at least one halide, amine, carboxyl, ketone and mixtures thereof; n is from zero to 10, m is from zero to 100, and m+n is greater than zero.

4,270,991

ANODIC OXIDATION OF ALUMINUM AND ALUMINUM ALLOYS WITH A LIGNIN ELECTROLYTE SOLUTION

Jack L. Woods, 1517 Ninth, Ogden, Utah 84404

Filed May 20, 1977, Ser. No. 799,010
Int. Cl.[3] C25D *11/08, 11/10*
U.S. Cl. 204—58 8 Claims

1. An electrolyte process for hard anodizing aluminum and aluminum alloys which comprises making an aluminum or aluminum alloy article anode in an acid electrolyte solution containing between 0.50 and 5.0 grams per liter of electrolyte solution of a lignin selected from the group consisting of lignin, a ligno sulfonic acid and a ligno sulfonate salt and an acid concentration between 60 and 350 grams per liter at a temperature between the freezing point of the electrolyte solution and 10° C.

4,270,992

PROCESS FOR PRODUCING GLYCOL

Mitsutaka Saito, Tokuyama, Japan, assignor to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed May 8, 1980, Ser. No. 147,959
Claims priority, application Japan, Jun. 1, 1979, 52/67511
Int. Cl.[3] C25B *3/10*
U.S. Cl. 204—59 R 4 Claims

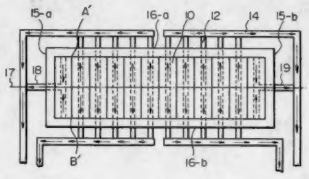
1. In a process for producing a glycol from formaldehyde, an improvement characterized in that the electrolysis of formaldehyde is carried out in an alkaline solution by using a carbon type electrode as a cathode.

4,270,993

METHOD OF STABILIZING AN ALUMINUM METAL LAYER IN AN ALUMINUM ELECTROLYTIC CELL

Youji Arita, Yokohama, Japan, assignor to Mitsubishi Light Metal Industries, Limited, Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 132,627
Claims priority, application Japan, Apr. 2, 1979, 54/39540
Int. Cl.[3] C25C *3/06, 3/16*
U.S. Cl. 204—67 4 Claims



1. A method of stabilizing an aluminum metal layer in an aluminum electrolytic cell where, in the interior of a rectangular container of an aluminum electrolytic cell, cell currents supplied from anode buses in the upper part of said electrolytic cell are drawn out through plural collector bars provided parallel to the end walls of said container, characterized by directing the direction of currents flowing through said collector bars to the longitudinal center line from the side walls of said container in the neighborhood of said end walls and to said side walls from said longitudinal center line in the longitudinal central part of said container.

4,270,994

ELECTROCHEMICAL DEHYDROGENATION OF STEROIDAL $\Delta^{3,5}$ ENOL ETHERS UNDER BASIC CONDITIONS TO PROVIDE STEROIDAL $\Delta^{4,6}$ DIENONES

James R. Behling, Lindenhurst, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 20, 1980, Ser. No. 122,938
Int. Cl.[3] C25B *3/02*
U.S. Cl. 204—78 23 Claims

1. An electrochemical process for dehydrogenating steroidal $\Delta^{3,5}$enol ethers to provide the corresponding $\Delta^{4,6}$ dienone comprising the steps of reacting a steroidal $\Delta^{3,5}$ enol ether in the present of a high potential catalyst, under basic conditions, with a suitable electolyte solution, at an applied voltage sufficient so that current passes, phenol is oxidized, the $\Delta^{3,5}$ enol remains inert to the anode and the reaction proceeds to completion, and thereafter recovering the steroidal $\Delta^{4,6}$ dienone from the reaction mixture.

4,270,995

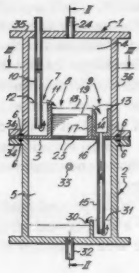
ELECTROCHEMICAL CELL AND PROCESS

Francis Goodridge, and Raymond E. Plimley, both of Newcastle-upon-Tyne, England, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jul. 13, 1979, Ser. No. 57,489
Int. Cl.[3] C25B *3/02, 3/06, 9/00, 15/08*
U.S. Cl. 204—79 26 Claims

7. A method of carrying out an electrochemical process or reaction in an electrochemical reactor comprising (I) a plurality of cells, each cell comprising (i) electrodes disposed over a perforated generally horizontal plate and (ii) an electrolyte inlet and (iii) an electrolyte outlet spaced apart on opposite sides of the electrodes across the perforated plate, and (II) a reactor housing in which the cells are stacked in a columnar arrangement, the perforated plates dividing the reactor housing into superimposed chambers, each perforated plate being disposed over a gas-supply chamber for passing gas up through perforations in the plate to bubble through electrolyte on the

plate and collect in the chamber thereabove and which (except for that of the top cell) forms the gas-supply chamber for the cell above, the method comprising flowing electrolyte down



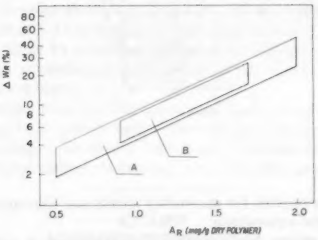
the columnar reactor from one cell to the next and across the perforated plate of each cell, and passing gas up through the perforations in the successive plates so that the gas bubbles through the electrolyte on each plate.

4,270,996

CATION EXCHANGE MEMBRANE OF FLUORINATED POLYMER FOR ELECTROLYSIS AND ELECTROLYSIS USING THE MEMBRANE

Manabu Suhara; Shoziro Goto, and Kiyotaka Arai, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,198
Claims priority, application Japan, Sep. 26, 1978, 53/117474
Int. Cl.[3] C25B *1/34, 13/08*
U.S. Cl. 204—98 **12 Claims**



1. A cation exchange membrane fabricated from a fluorinated polymer and useful for the electrolysis of an alkali metal chloride prepared by a process, comprising: treating a cation exchange membrane having ion exchange groups of the formula: —COOM, wherein M is hydrogen, an alkaline earth metal or an alkali metal or groups convertible to said —COOM group and having an ion exchange capacity (A_R) of 0.5 to 2.0 meq/g dry polymer in a hydrolyzed form in an aqueous medium of a base or a slat at a concentration of 1 to 20 wt. % at the temperature of 0° to 60° C. after hydrolysis or at the time of hydrolysis, said treated membrane exhibiting a weight gain percent (ΔW_R) in the range of $\Delta W_R = 1.6e^{1.7AR}$ on the upper side; $\Delta W_R = 0.8e^{1.7AR}$ on the lower side; $A_R = 0.5$ on the left side and $A_R = 2.0$ on the right side shown in FIG. **1** (log scale on ordinate).

4,270,997

LASER PHOTOCHEMICAL SYNTHESIS OF Si_3N_4

James A. Merritt, Pulaski, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 87,115, Oct. 22, 1979, Pat. No. 4,227,907.
This application Apr. 7, 1980, Ser. No. 137,887
Int. Cl.[3] B01J *19/12*
U.S. Cl. 204—157.1 R **1 Claim**

1. A method of producing Si_3N_4 by laser photochemical reaction initiated by irradiating the reactant gases in a controlled atmosphere laser reaction chamber, said method comprising:

(a) introducing into a laser reaction chamber that is provided with a salt window transparent to laser radiation, a controlled atmosphere of the reactant gases of SiX_4 and NX_3, wherein X is selected from hydrogen and fluorine, said gases maintained in a controlled atmosphere at pressures between about 10 and about 200 torr in a molar volume ratio of about 3 of said SiX_4 to about 4 of said NX_3;

(b) irradiating said controlled atmosphere with the P(36) line of a CO_2 laser to produce said Si_3N_4 as a powdery solid; and,

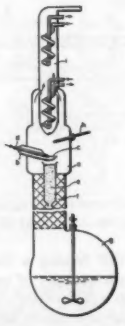
(c) separating and removing said powdery solid of Si_3N_4 from said laser reaction chamber.

4,270,998

PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED ACETONITRILES MONOHALOGENATED IN THE α-POSITION

Rüdiger Schubart, Berg.-Gladbach, and Rudolf Braden, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 78,989
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844200; Feb. 10, 1979, 2905082
Int. Cl.[3] B01J *19/12*
U.S. Cl. 204—158 HA **9 Claims**



1. A process for the preparation of momohalogenated acetonitrile which comprises contacting acetonitrile with halogen at elevated temperatures in the liquid phase under the action of UV light in the presence of a halide of an element of group III–VI of the Mendeleeff Periodic Table, said halide having a vapor pressure of at least 0.05 bar, the halogenation being carried out to an extent such that the concentration of the acetonitrile monohalogenated in the α position in the reaction mixture continuously withdrawn from the reaction zone is not more than 33 mol percent, based on the number of mols of all the substances contained in the reaction mixture so withdrawn.

4,270,999

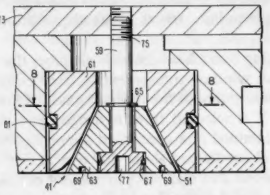
METHOD AND APPARATUS FOR GAS FEED CONTROL IN A DRY ETCHING PROCESS

Javathu K. Hassan, Hopewell Junction, and John A. Paivanas, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,759

Int. Cl.³ C23F *1/00*; C23C *15/00*

U.S. Cl. 204—192 E **13 Claims**



1. A method for dry etching in a uniform gaseous molecular field under high vacuum conditions comprising providing a source of a reactant gas, introducing said gas into a manifold, said manifold feeding at least one nozzle, passing said gas through said manifold and through said nozzle into a chamber maintained under vacuum conditions, causing said gas to exit from said nozzle into said chamber under vacuum at sonic velocity within said nozzle, creating plasma from said reactant gas adjacent said objects and etching said objects.

4,271,000

ELECTROCHEMICAL SENSOR FOR MEASURING RELATIVE CONCENTRATIONS OF REACTIVE SPECIES IN A FLUID MIXTURE

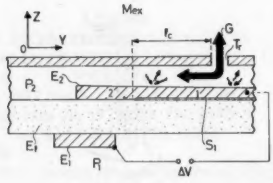
Michel Croset, and Gonzalo Velasco, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 6, 1979, Ser. No. 91,757

Claims priority, application France, Nov. 7, 1978, 78 31438

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **9 Claims**



1. An electrochemical sensor for measuring relative concentrations of reactive species contained in a fluid mixture, comprising:

an electrochemical cell having a flat structure which is sensitive to an excess quantity of one of the reactive species with respect to stoichiometry of the reaction; and

an enclosure which communicates with the fluid mixture to be analyzed through a first orifice and with said electrochemical cell through a second orifice,

wherein said cell comprises:

a first electrode in contact with said enclosure,

a second electrode isolated from said enclosure and in contact with a reference medium, and

a solid electrolyte which is an ionic conductor for the species to be analyzed or for an ion which is capable of reacting with said species, said electrolyte being in contact with said two electrodes of the electrochemical cell,

said enclosure being in the form of a duct which is parallel along its greatest dimension to the plane of said first electrode of the electrochemical cell, and

wherein said first electrode is formed of catalytic material, said catalytic material being also deposited on the bottom wall of said enclosure,

said first electrode being also divided into two zones such that the first zone constitutes with said second electrode and said solid electrolyte of the electrochemical cell a measurement zone which is sensitive to the species to be analyzed while the second zone extends over a predetermined distance of said duct in the direction of the aforesaid orifice for providing a communication with said fluid mixture to be analyzed and constitutes a zone for catalysis of said mixture, and

wherein the surface of the second zone of said first electrode is provided with a corrugated structure in order to increase the surface area in contact with said fluid mixture to be analyzed.

4,271,001

APPARATUS FOR MEASURING MEMBRANE CHARACTERISTICS OF VESICLES

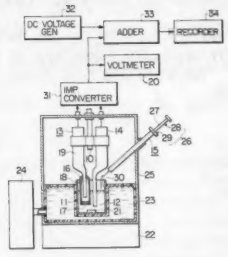
Hiroshi Imafuku; Takeo Kimura, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 15, 1979, Ser. No. 20,688

Claims priority, application Japan, Mar. 23, 1978, 53-32338; Mar. 5, 1979, 54-25251

Int. Cl.³ G01N *27/42*

U.S. Cl. 204—195 B **7 Claims**



1. An apparatus for measuring membrane characteristics of vesicles and comprising:

vessel means for containing vesicles and a solution of lipophilic ion;

electrode means, selectively responsive only to the lipophilic ion, for producing an output indicative of lipophilic ion concentration;

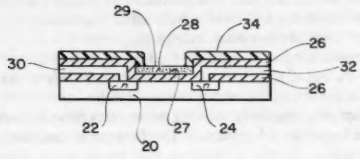
arithmetic unit means, electrically connected with said electrode means, for calculating the time-change rate of the detected output from said electrode means and also for calculating the permeability coefficient of the vesicular membrane for the lipophilic ion and/or the membrane potential of the vesicular membrane from said output of said electrode means, from said time-change rate, and from the following input data: the volume and temperature of the solution, and the total volume and the total surface area of the vesicles suspended in the solution; and

input means for inputting said input data to said arithmetic unit means.

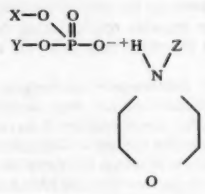
4,271,002
CALCIUM ION-SELECTIVE ELECTRODES AND MEMBRANE FOR USE THEREIN

John J. Hawkins, Santa Ana, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 52,639, Jun. 27, 1979, which is a continuation-in-part of Ser. No. 880,908, Feb. 24, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,031
Int. Cl.[3] G01N *27/46*
U.S. Cl. 204—195 M 75 Claims



1. A membrane for use in the determination of calcium ion concentration in an aqueous solution, said membrane being of the type comprising a calcium ion selective component and a carrier material, characterized in that said calcium ion selective component is a compound having a formula



wherein

X and Y are selected from a group consisting of aryl, alkyl(aryl) alkenyl, cycloalkenyl, and alkynyl radicals wherein said alkyl moiety of said alkyl(aryl) radical consists of 1–12 carbon atoms; each alkenyl and alkynyl moiety of said alkenyl(aryl) and alkynyl(aryl) radicals, respectively, consists of 2–12 carbon atoms; each aryl moiety consists of 6, 10, 12, or 14 carbon atoms; and each alkyl, cycloalkyl, alkenyl, cycloalkenyl, and alkynyl radical consists of 6 to 14 carbon atoms; and

Z is selected from a group consisting of alkyl radicals containing 1–12 carbon atoms; alkenyl and alkynyl radicals containing 4–12 carbon atoms; and cycloalkyl and cycloalkenyl radicals containing 6 to 12 carbon atoms.

4,271,003
CHEMOELECTRIC CELL

Olle B. Lindstrom, Taby, Sweden, assignor to AB Olle Lindstrom, Taby, Sweden

Division of Ser. No. 881,606, Feb. 27, 1978, Pat. No. 4,181,776, which is a continuation of Ser. No. 696,925, Jun. 17, 1976, abandoned. This application Aug. 16, 1979, Ser. No. 67,142
Claims priority, application Sweden, Jun. 18, 1975, 7507041
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.[3] C25B *1/10, 1/26*
U.S. Cl. 204—265 2 Claims

1. A chemoelectric cell for producing hydrochloric acid and alkali in the electrolysis of brine comprising:

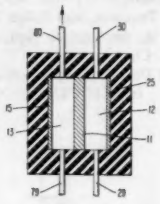
a positive electrode for the production of hydrochloric acid comprising a hydrogen electrode, a negative electrode for the production of alkali spaced from said positive electrode to define an interspace therebetween for conducting electrolyte,

one of said electrodes comprising a gas electrode having one side facing said interspace,

a porous separator disposed in said interspace and abutting against said side of said gas electrode,

said separator defining passageways open toward said side of said gas electrode for conducting gaseous substance from an inlet end to an outlet end of said interspace;

portions of said side of said gas electrode located along said passageways being coated with electrolyte repellant material,



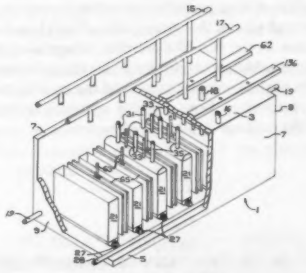
means for delivering electrochemically active gaseous substance into said passageways for travel along and reaction with said portions of said side of said gas electrode that are coated by said electrolyte repellant material, and

means for delivering liquid electrolyte to said interspace to impregnate said separator so that electrolyte is in contact with areas of said side of said gas electrode which are abutted by said separator.

4,271,004
SYNTHETIC SEPARATOR ELECTROLYTIC CELL

Hugh Cunningham, and Carl W. Raetzsch, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 11, 1979, Ser. No. 56,580
Int. Cl.[3] C25B *9/04, 11/03, 13/04*
U.S. Cl. 204—266 9 Claims



1. An electrolytic cell comprising:

(a) an electrolyte tank having a top, a bottom, and sidewalls;

(b) planar first electrodes, substantially parallel to, spaced from, and electrically in parallel with each other, in said electrolyte tank;

(c) hollow second electrodes of opposite polarity to and interleaved between said planar first electrodes, said hollow second electrodes being substantially parallel to, spaced from, and electrically in parallel with each other;

(d) ion permeable separator means on the external surfaces of said hollow second electrodes between said planar first electrodes and said hollow second electrodes; and

(e) first bus bar means above said electrolyte tank, electrically and mechanically in series with said planar first electrodes through the electrolyte tank top, and second

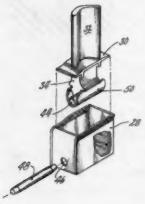
bus bar means above said electrolyte tank, electrically and mechanically in series with said hollow second electrodes through the electrolyte tank top.

4,271,005

WORKPIECE SUPPORT APPARATUS FOR USE WITH CATHODE SPUTTERING DEVICES

Robert J. Wright, Tequesta, and Ralph J. Hecht, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 3, 1979, Ser. No. 99,246
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **5 Claims**



1. Apparatus for supporting within a cathode sputtering device a workpiece having an attachment section, a platform section and an airfoil section and for shielding the attachment section of the workpiece from coating material to be deposited on airfoil and platform surfaces of the workpiece during a sputtering process, the apparatus comprising:

a clip which is adapted to engage the attachment section of the workpiece to be supported and which has an open ended tube;

a box-like member having one open side into which the attachment section of a workpiece engaged by one of said clips is insertable and having five closed sides; and

a pin which is at least partially insertable into said tube of the clip through one of the closed sides of said box to hold the workpiece in the box-like member wherein said box-like member is adapted to circumscribe the periphery of the platform of the workpiece to shield the attachment section of the workpiece from coating material to be applied within the cathode sputtering apparatus.

4,271,006

PROCESS FOR PRODUCTION OF CARBON ARTIFACT PRECURSOR

Ghazi Dickakian, Scotch Plains, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 23, 1980, Ser. No. 143,136
Int. Cl.³ C10C *1/20, 1/18*
U.S. Cl. 208—40 **9 Claims**

1. A process for preparing a ptich suitable for carbon artifact manufacture comprising:

providing a cat cracker bottom fraction boiling in the range of from about 200° C. to about 550° C.;

treating said cat cracker bottom fraction to remove at least a portion of said fraction which boils below about 400° C.;

heat soaking the so-treated cat cracker bottom in an inert atmosphere at temperatures in the range of about 390° C. to about 450° C. for times ranging from about ½ to 10 hours to provide a carbonaceous pitch.

4,271,007

METHOD AND APPARATUS FOR THE PREVENTION OF SOLIDS DEPOSITS IN A TUBULAR REACTOR BY PULSED FLOW

Frank Souhrada, Weston, and Buenaventura B. Galvez, Islington, both of Canada, assignors to Gulf Canada Limited, Toronto, Canada

Filed Nov. 23, 1979, Ser. No. 97,011
Int. Cl.³ C10G *9/16, 9/18, 47/36*
U.S. Cl. 208—48 R **12 Claims**

1. A method for processing a liquid which is to flow through a tubular vessel at a rate that produces primarily laminar flow conditions therein and from which solids can form and deposit onto the wall of the vessel, comprising:

(a) maintaining a continuous feed of the liquid into the inlet of the vessel at a rate that causes laminar flow of the liquid as it moves to the outlet of the vessel;

(b) applying regularly varying pressure pulses to the flow of the liquid at a location in the flow near one end of the vessel;

(c) maintaining, by means of said pulses, a positive displacement of the liquid to and from a surge chamber adapted to receive and discharge the liqud and connected to the flow near the opposite end of the vessel from the point of application of the varying pressure pulses;

(d) controlling the frequency and amplitude of the pressure pulses effectively so that the flow conditions in the liquid in the vessel between the point of application of the pulses and the surge chamber reach, during the cycles, a peak instantaneous Reynolds number in the turbulent region; and

(e) substantially continuously discharging liquid from an outlet downstream from the surge chamber.

3. An apparatus for processing liquids having a tendency to deposit solids on tubular reactor walls, comprising:

(a) a tubular reactor in which the processing is carried out;

(b) a pulsating mechanism near one end of said reactor comprising a chamber in open communication with the reactor and a means to induce continuous sub-audio oscillation in the liquid being processed of frequency and amplitude sufficient to achieve during each oscillation a peak instantaneous Reynolds number in the turbulent flow region;

(c) a means near the opposite end of said reactor from said pulsating mechanism to contain the surges of liquid produced by the oscillating flow;

(d) a means to ensure a substantially continuous feed to the reactor system, which reactor system consists of the reactor, the pulsating mechanism and means to contain the surges; and

(e) a means at the outlet of the reactor system to maintain pressure inside the reactor system.

4,271,008

PRODUCTION OF ETHYLENE

Wilhelm Vogt, Hürth, and Hermann Glaser, Erftstadt, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,609
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852314
Int. Cl.³ C10C *9/16;* C07C *4/04, 11/04*
U.S. Cl. 208—48 R **5 Claims**

2. A process for making ethylene by subjecting a gas mixture containing hydrocarbons, hydrogen, carbon monoxide, carbon dioxide and steam to a hydropyrolysis reaction, which comprises heating the gas mixture to temperatures higher than 800° C. and maintaining the heated gas mixture under a pressure of less than 5 bars inside a reaction zone having metal walls coated with an overlayer of at least one metal selected from copper and aluminum, said overlayer being applied to the metal walls via the gas phase with the use of at least one halogen compound as a transporting agent.

4,271,009

METHOD FOR REDUCING THE NITROGEN CONTENT OF SHALE OIL

Carole S. Stover, Van Nuys; Leslie E. Compton, Claremont, and Eugene G. Youngerman, Downey, all of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Jun. 27, 1979, Ser. No. 52,637
Int. Cl.[3] C10G *17/04, 17/07;* G10G *21/18*
U.S. Cl. 208—254 R 12 Claims

1. A method for reducing the nitrogen content of shale oil by removing nitrogen-containing compounds from shale oil, comprising the steps of:

(a) reducing the viscosity of the shale oil by mixing the shale oil with a miscible non-polar diluent selected from the group consisting of ethers, chloroform, carbon tetrachloride and halocarbons;

(b) extracting nitrogen-containing compounds from the shale oil with a selective solvent system for the nitrogen-containing compounds consisting essentially of from about one to about fifty percent by weight water and an organic acid selected from the group consisting of formic acid, acetic acid, trichloracetic acid and mixtures thereof; and,

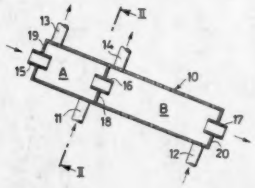
(c) separating the solvent phase containing nitrogen-containing compounds from the shale oil phase having a reduced nitrogen content.

4,271,010

CYLINDRICAL SEPARATOR APPARATUS FOR SEPARATING MIXTURES OF SOLIDS OF DIFFERENT SPECIFIC GRAVITIES, PARTICULARLY FOR THE MINING INDUSTRY

Massimo Guarascio, Via Urbana 12/C, Rome, Italy

Filed Sep. 5, 1978, Ser. No. 939,684
Claims priority, application Italy, Sep. 6, 1977, 27291 A/77
Int. Cl.[3] B04C *3/04*
U.S. Cl. 209—211 12 Claims



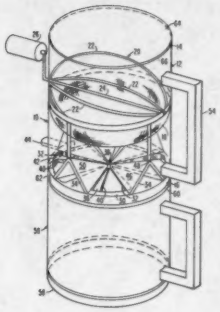
1. A cylindrical separator apparatus for the separation of mixtures of solids of different specific gravities, particularly for the mining industry, comprising a hollow cylindrical body that is divided by a partition wall into two consecutive first and second respective uppermost and lowermost chambers communicating with each other through an axial pipe provided in said partition wall, a front wall of said first chamber opposite to said partition wall being provided with an axial inlet pipe and a front wall of the second chamber opposite to the partition wall being provided with an axial outlet pipe, the first chamber being moreover provided with a tangential inlet pipe in the vicinity of the partition wall and with a tangential outlet pipe in the vicinity of its front wall, and the second chamber, being moreover provided with a tangential inlet pipe in the vicinity of its front wall and with a tangential outlet pipe in the vicinity of the partition wall.

4,271,011

FLOUR SIFTER

Patricia J. Spencer, 805 Valley View Rd., Ft. Collins, Colo. 80524; Carrie P. DeRoeck, and Robert L. DeRoeck, both of 345 Keith Dr., Colorado Springs, Colo. 80916

Filed Jul. 7, 1980, Ser. No. 166,756
Int. Cl.[3] B07B *1/02*
U.S. Cl. 209—236 6 Claims



1. A flour sifter comprising:

an upright cylinder;

a screen disposed generally transversely across the interior of said cylinder intermediate the length thereof;

an agitator disposed immediately above and movable over said screen to effect the sifting of flour therethrough;

a first plate affixed across the lower end of said cylinder and including means defining a circumferentially-spaced first series of openings successively separated by respectively interposed first panels;

a second plate juxtaposed with said first plate, movable about an axis extending centrally of said cylinder and including means defining a circumferentially-spaced second series of openings successively separated by respectively interposed second panels, said second openings being alignable with said first openings upon movement of said second plate to one position and being alignable with said first panels upon movement of said second plate to another position;

and means included on each of the panels of the uppermost one of said plates defining a smooth surface which slants upwardly from the adjacent margin of a corresponding opening in said one plate toward the adjacent margin of the next successive opening in said one plate beyond the upper terminus of said surface.

4,271,012

AUTOMATIC EMBOSSING SYSTEM

Richard J. LaManna, Whippany; Jacob H. Drillick, Hawthorne, both of N.J., and Michael D. Polad, Mendota, Minn., assignors to Data Card Corporation, Minnetonka, Minn.

Division of Ser. No. 835,406, Sep. 21, 1977, Pat. No. 4,180,338, which is a division of Ser. No. 720,071, Sep. 2, 1976. This application Mar. 7, 1979, Ser. No. 18,279
Int. Cl.[3] B07C *9/00*
U.S. Cl. 209—653 7 Claims

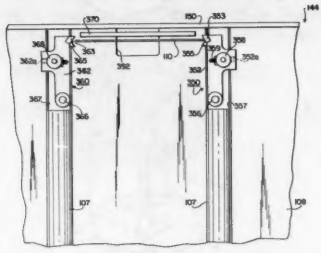
1. An output stacker mechanism for receiving processed documents and selectively stacking same in accept and reject portions thereof, comprising:

resilient engaging means defining first and second channels for receiving first and second edges of a document deposited in said output stacker at a position intermediate said accept and reject portions thereof,

deflection means selectively positionable initially at one of first and second opposite sides of said resilient engaging

means and selectively movable in first and second opposite directions to the respectively opposite said side,

means for displacing said deflection means to a first of said two sides prior to deposit of a document therein and means for energizing said deflection means to deflect said deposited document in said first direction beyond said resilient engaging means and into said accept portion of said output hopper and, in response to an error indication, displacing said deflection means to said second side prior to depositing a document in said output hopper and there-



after energizing said deflection means to deflect said document deposited in said resilient engagement means in said second direction, beyond said resilient engaging means and into said reject hopper, thereby to physically separate the transported documents at said output stacker into said accept and reject portions, a pair of guide rails are provided, said resilient engaging means including a pair of movable detent mechanisms for providing the first and second channels, and each of the movable detent mechanisms are pivotally mounted on a guide rail.

4,271,013

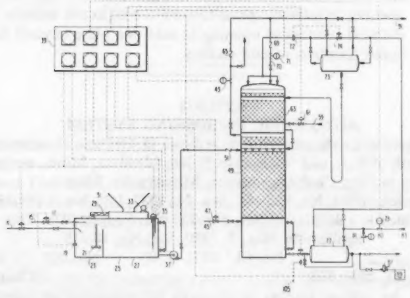
METHOD AND APPARATUS FOR REMOVING BIODEGRADABLE COMPOUNDS FROM WASTEWATER

Aniruddha Bhattacharyya, West Seneca, N.Y., assignor to Republic Steel Corporation, Cleveland, Ohio and The Hanna Furnace Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 13,679, Feb. 21, 1979. This application Apr. 24, 1979, Ser. No. 32,897

Int. Cl.[3] C02F *3/08, 1/04*

U.S. Cl. 210—617 **15 Claims**



1. A method for removing biodegradable compounds selected from the group comprising: oils, volatile organics, phenolics free and fixed ammonia compounds, thiosulfates, thiocyanates, cyanides, sulfides and the like from a feed wastewater comprising the steps of:

(a) distilling said wastewater to remove said free ammonia compounds, oils and volatile organics;

(b) adding soda ash to said wastewater and steam distilling said wastewater to remove said fixed ammonia compounds;

(c) treating said wastewater of step (b) by means of an activated sludge treatment in a single stage sludge reactor comprising biological solids, said solids reactor further comprising particulate solids selected from the group comprising clay, fly ash, powdered activated carbon, or the like adapted to improve the settling characteristics of said sludge and running said reactor at a solids retention time of about 100–1000 days, said activated sludge exhibiting substantially no net biological growth to produce an effluent comprising biological and particulate solids;

(d) separating said biological and particulate solids from said solids containing effluent of steps (c); and

(e) recycling substantially all of said separated solids from said settling tank to said activated sludge reactor whereby substantially no solids wasting occurs.

4,271,014

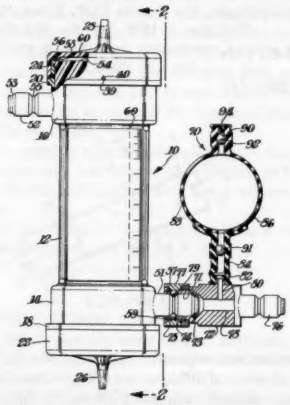
DIALYSIS APPARATUS AND TECHNIQUE

James D. Aid, St. Petersburg, Fla., and Kyu H. Lee, King of Prussia, Pa., assignors to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Continuation-in-part of Ser. No. 827,565, Aug. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 799,582, May 23, 1977, abandoned. This application May 7, 1979, Ser. No. 36,406

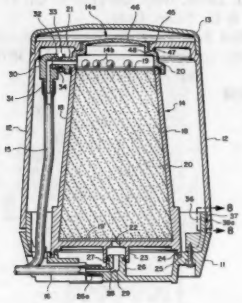
Int. Cl.[3] B01D *31/00*

U.S. Cl. 210—86 **13 Claims**



8. A dialyzer having a one-piece elongated casing shaped to provide a dialysis chamber and integrally with the chamber an externally viewable transparent passageway for dialyzate downstream of and in series with that chamber, said passageway being entirely devoid of solid contents and having a substantially uniform cross-sectional area throughout its length and being connected to convey all of the dialyzate flowing out of the chamber, the cross-sectional area of said passageway being from about $\frac{1}{3}$ to about 3 square centimeters for each square meter of dialysis membrane surface in the chamber, said casing further containing measuring indicia indicating spaced liquid levels in the passageway.

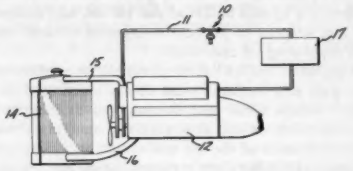
4,271,015
WATER TREATMENT APPARATUS
Roger S. Moore, 1990 Olivera Rd., Concord, Calif. 94520
Filed Jan. 22, 1979, Ser. No. 5,312
Int. Cl.³ B01D *27/02*
U.S. Cl. 210—94 **4 Claims**



1. A water treatment apparatus comprising
a housing including
a base having a flexible discharge tube connected thereinto and a flexible inlet tube extending therethrough, and
a cover having a viewing opening in one end thereof, said base and said cover having mating locking means thereon to interlock said cover to said base;
a disposable filter cartridge having a casing with a transparent top cover;
a filter element in said casing, spaced from said transparent top cover;
a filter inlet opening nipple projecting from the casing between the filter element and below the transparent top cover;
a discharge opening from the casing below the filter element;
means positioning the filter cartridge to the base whereby the discharge opening is coupled to the flexible base discharge tube;
means coupling the protruding filter inlet opening to the flexible filter inlet tube;
means on the cover for securing the filter cartridge to the base when the cover is locked to the base whereby the transparent top cover of the filter cartridge is visible through the viewing opening of the cover; and
valve means for directing a flow of water through said flexible inlet tube, said filter cartridge, said flexible base discharge tube and back through said valve means to be discharged therefrom.

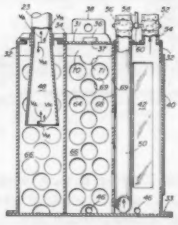
4,271,016
SEDIMENT INDICATOR FOR LIQUID CIRCULATORY SYSTEM
Robert V. Albertson, 2100 Shadywood Rd., Wayzata, Minn. 55391
Filed Apr. 30, 1979, Ser. No. 34,267
Int. Cl.³ B01D *21/00*
U.S. Cl. 210—94 **3 Claims**

1. A sediment indicator to provide visual indicia of the amount of sediment contained in the fluid medium of a fluid circulatory system having a fluid flow line, comprising:
a generally T-shaped member with a first elongate leg comprised as a transverse open ended tubular member defining an unobstructed fluid flow passage having opposed open ends to be insertable in a fluid flow line of a fluid circulating system with said fluid flow passage disposed in a normal circulatory flow path of fluid in the circulatory system when the tubular member is inserted in said fluid flow line, said unobstructed passage having a diameter substantially the same as said flow line so as to minimize disruption of normal flow line flow,
said T-shaped member having a second leg including a neck extending from the tubular member and having an unobstructed connecting passage open to said fluid flow passage of the tubular member;
said connecting passage having a diameter substantially equal to that of said flow passage;
an enlarged cylindrical head extending from said neck;
a cylindrical housing connected to the head and having a cylindrical sediment depository chamber open to said



fluid flow passage of the tubular member such that at least some sediment in fluid circulating through the fluid flow line is capable of entering the chamber through said unobstructed, full diameter passages;
said housing having a side wall at least partially transparent to permit viewing into the chamber from without the housing to determine the amount of sediment collected in the chamber,
and means detachably connecting said housing to said T-shaped member in sealed relation thereto by interengagement with the enlarged head of said second leg of said T-shaped member to abut a portion of said housing against said enlarged head.

4,271,017
OIL SEPARATOR
Jerome H. Milgram, Cambridge, Mass., assignor to Offshore Devices, Inc., Peabody, Mass.
Filed Mar. 30, 1979, Ser. No. 25,620
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—95 **8 Claims**



1. A separator for separating oil from water at the scene of an oil spill, comprising;
a tank with a top and bottom,
said tank being sealed for pressurized flow therethrough,
at least one upright, imperforate bulkhead extending from top to bottom of said tank and dividing said tank into a folded, horizontal flow path, said bulkhead preventing cross communication between upstream and downstream portions of the folded flow path,
inlet means at one end of said path for receiving a pressurized mixture including oil, water, and debris,
said inlet means having an inlet diameter that establishes a maximum-size debris that can enter said tank,

oil outlet means at the other end of said path for permitting outflow of oil from the top of said tank,

water outlet means at the other end of said path for permitting outflow of water from the bottom of said tank,

valve means for adjusting the relative proportion of water and oil outflowing from said tank through said outlet means, thereby allowing the heights of separated oil and water at said other end to be maintained constant,

indicating means for providing an indication to an operator of said heights of separated oil and water, and

a plurality of horizontally-spaced, upright perforate baffles extending across said flow path and dividing said path into a plurality of compartments bounded in the vertical direction by said top and bottom and bounded in the horizontal direction by said bulkhead and baffles, said compartments being adapted to provide unimpeded vertical movement of separating oil and water,

said perforate baffles having perforations preselected in size to pass said maximum-size debris entering through said inlet means while also evening out differences in flow velocity across said flow path and damping sloshing and wave motion of the oil and water, including interfacial waves at the interface between the oil and water,

said tank, said upright bulkhead, said perforate cross baffles, and vertically-unimpeded compartments enabling an inclined oil-water separating interface to be established over the length of said flow path as separating water progressively settles and separating oil progressively rises while the pressurized total flow proceeds toward the respective oil and water outlet means at the downstream end of said path.

4,271,018

BACKWASHABLE FLUID FILTERS

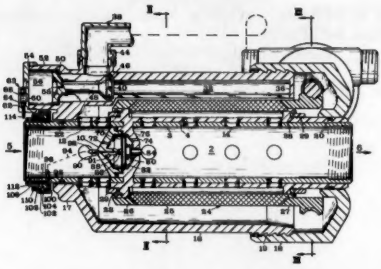
Mordeki Drori, 89 Zahal Street, Kiron, Israel

Filed Sep. 11, 1979, Ser. No. 74,525

Claims priority, application Israel, Sep. 22, 1978, 55622

Int. Cl.[3] B01D *33/06*

U.S. Cl. 210—107 **8 Claims**



1. A backwashable filtering device, comprising a housing including an inlet connectable to an upstream fluid pipe, and an outlet connectable to a downstream fluid pipe; a filter body disposed within the housing and having an upstream surface on the housing inlet side thereof to intercept dirt particles in the fluid flowing in the forward direction through the filter body from the housing inlet to the housing outlet; and a backwash nozzle having an inlet opening disposed adjacent to said upstream surface of the filter body for backwashing the filter body; characterized in that: said backwash nozzle is fixed with respect to said housing, said filter body being mounted for rotation with respect to the backwash nozzle and including teeth annularly disposed around one end thereof, a rotor within said housing and having blades in the path of the fluid flowing through the nozzle so as to be rotated thereby, and gear means within said housing and coupling said rotor to said teeth on the filter body to rotate said filter body relative to said nozzle to enable the nozzle inlet opening to scan substantially the complete upstream surface of the filter body.

4,271,019

FILTER UNIT FOR USE IN LIQUID PURIFICATION APPARATUS

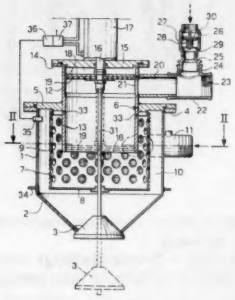
Alfonso Galletti, Turin, Italy, assignor to Gi. Pi. S.n.c. di Galletti Alfonso & C., Turin, Italy

Filed Aug. 13, 1979, Ser. No. 66,101

Claims priority, application Italy, Oct. 13, 1978, 69365 A/78

Int. Cl.[3] B01D *23/26*

U.S. Cl. 210—108 **2 Claims**



1. A filter unit for filtering a particle-containing liquid, comprising:

a casing, arranged with its axis vertical, and defining a first closed chamber and an inlet for said particle-containing liquid;

a normally-closed discharge valve located in a lower part of said casing and arranged to discharge liquid from said first chamber;

a perforated cylindrical wall located within, and coaxial with, said casing;

a non-perforated cylindrical wall having a diameter less than said perforated cylindrical wall coaxially disposed within said perforated cylindrical wall and projecting above said perforated cylindrical wall and said casing;

an annular wall closing the upper end of said casing and an annular chamber portion between said cylindrical walls;

upper and lower end walls defining with said perforated cylindrical wall, said non-perforated cylindrical wall and said annular wall a second chamber, said non-perforated wall defining an outlet for liquid filtered by said filter unit;

a filter element covering said perforated cylindrical wall and arranged to retain particles in said particle-containing liquid fed into the first chamber through the inlet and to allow substantially particle-free liquid to flow therethrough into the second chamber to be discharged through said outlet;

a piston slidable axially within said second chamber;

a rod connecting said piston to said discharge valve; and

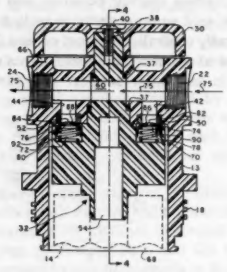
a control actuator located above said upper end wall of said second chamber and connected to said piston to drive the latter so as to expel liquid from said second chamber through said filter element, in counter-flow to the normal flow of liquid therethrough, to cleanse the filter element of particles retained thereon, and simultaneously to open said discharge valve to expel particle-containing liquid from said first chamber therethrough;

said outlet from said second chamber being connected to a pipe union; a tubular body connected at one end thereof to said pipe union and at the other end thereof to define an opening to the atmosphere; and a non-return valve provided in said tubular body, said non-return valve being openable to allow air therethrough into said pipe union.

4,271,020
VALVE FOR FILTER DEVICE

Arch Van Meter, Barrington, Ill., assignor to Ryder International Corporation, Arab, Ala.

Filed Oct. 22, 1979, Ser. No. 87,419
Int. Cl.[3] B01D *27/10, 35/14*
U.S. Cl. 210—133 Q 3 Claims



1. A valve assembly for use in a filter, said valve assembly comprising, a valve housing having an axially extending open end to which a filter arrangement comprised of a filter housing and a filter member maybe affixed, said valve housing further including inlet passage means and outlet passage means, each said inlet and outlet passage means being spaced from the other and each including a bore portion extending generally axially of said open end, with a resilient sealing member disposed about the open end of each said bore portion, a valve member rotatably carried by said valve housing, said valve member including first and second generally axially extending channels, and a third channel disposed transversely of said first and second channels, said first axially extending channel adapted to be aligned with the bore portion of said inlet passage means, and said second axially extending channel adapted to align with the bore portion of said outlet passage means when the valve member is in a first position, such that fluid entering said inlet will pass into a filter arrangement attached to said valve, and from said filter arrangement through the second channel to said outlet passage means, said third channel being out of engagement with said passage means when said valve member is in said first position, but being disposed such that upon movement of the valve member to a second position, said third channel will establish direct communication between said inlet and said outlet passage means thereby bypassing said filter arrangement, with said first and second channels being out of alignment with said bore portions when the valve member is in said second position, and auxiliary sealing means for sealing said valve assembly against leakage past the open ends of said bore portions when said valve member is in said second position, thereby permitting a filter arrangement to be removed from said valve housing, said auxiliary sealing means comprising a pair of chambers formed in said valve member and opening axially toward the open ends of said bore portions, said chambers being spaced to align with said open ends of the bore portions when said valve member is in the second position, a resilient cup shaped seal member disposed in each said chamber, and biasing means in each said chamber urging the associated cup shaped seal member toward the open end of the adjacent bore portion for engagement with the resilient seal disposed about said open end of the bore portion, and a through aperture formed in each cup shaped seal communicating with the associated chamber, and the surface area of each said cup shaped seal member presented to its chamber being greater than the surface area of said seal member presented to the associated bore means, whereby the fluid entering and charging said chamber through said aperture means will force said seal member axially against the annular seal member disposed about the open end of the associated bore portion.

4,271,021
PROCESS FOR INCREASING THE RESISTANCE TO WATER OF PRE-COATED PREPARATIONS FOR CHROMATOGRAPHY

Heinz E. Hauck, Frankfurt am Main, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

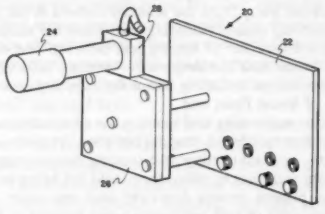
Filed Dec. 5, 1979, Ser. No. 100,330
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856056
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—198.3 12 Claims

1. A process for increasing the resistance to water and decreasing the organic and inorganic impurity content of a chromatographic sorbent layer which is coated onto a support and which comprises a binder consisting essentially of at least one salt of a polyacrylic acid, a polymethacrylic acid, or a mixture thereof, the process comprising treating the supported sorbent layer with an acid whereby the salt form of the polyacrylic acid, polymethacrylic acid, or a mixture thereof, is essentially converted to the corresponding free acid form, and the sorbent layer is cleansed from the organic and inorganic impurities; then washing the acid treated layer, whereby further cleansing from impurities is effected; and drying the acid treated layer.

4,271,022
DETECTION UNIT WITH SOLUTE DETECTOR AND TRANSPORT SYSTEM

Jack B. Dixon, Georgetown, and Randall C. Hall, Round Rock, both of Tex., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Dec. 18, 1978, Ser. No. 970,324
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—198.2 18 Claims



1. In a liquid chromatography device, a transport system for transporting effluents having a liquid state carrier between predetermined operational areas including an effluent application area and an effluent treatment area, said transport system comprising:

a porous conveyor for receiving said effluents having said liquid state carrier at said effluent application area; and

a rotatable disc substantially less porous than said conveyor and having said conveyor mounted on the periphery thereof to thereby effectively maintain said effluents and liquid carrier thereof on said porous conveyor at the periphery of said disc so that rotation of said disc causes said effluents and liquid carrier thereof applied to said conveyor at said effluent application area to be moved therefrom through said effluent treatment area.

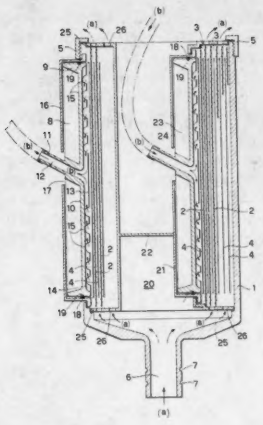
4,271,023
SPIRAL-SHAPED DIALYSIS AND ULTRAFILTER DEVICE, ESPECIALLY FOR EXTRACORPOREAL HAEMODIALYSIS

Sergio Giovannetti, Pisa; Giuliano Barsotti, Lido Di Camaiore, and Giovanni Donati, Cecigliano Alto, all of Italy, assignors to Tecnodial, S.P.A., Montevarchi, Italy

Continuation of Ser. No. 774,625, Mar. 4, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,492

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **14 Claims**



1. A dialyzing and ultrafiltering device of the spiral type for extracorporeal dialysis having an outer container and a removable central coil for winding the tubular dialyzing membrane, comprising:

an inlet and an outlet conduit for blood from the container;

connecting means for connecting said membrane to said inlet and outlet conduits, said connection means for the inlet conduit being housed in a longitudinal window formed in the body of the central coil and said connecting means for the outlet conduit being slidably receivable by a longitudinal window in the opposite external wall of the outer container away from the window formed in the coil, each connecting means including two elements adapted to be coupled together to form a seal between one end of the membrane and the respective conduit, said connecting means further including means for effecting even distribution of blood flow; and

means for supporting and spacing the adjacent spirals of the dialyzing membrane running between the two connecting means, said supporting and spacing means comprising a woven mesh net in rolled form, said net being in a rectangular pattern woven one-over and one-under with the longer sides of said rectangles being parallel to the direction of blood flow to increase turbulence in the flow of the dialyzing fluid and minimize hindrance to the blood flow, the initial end of said net being anchored to the central coil.

4,271,024
LIQUID FILTER

Raymond P. Kawolics, Solon, and Donald R. Basel, Garfield Heights, both of Ohio, assignors to Meyer Dairy Products, Co., Cleveland, Ohio

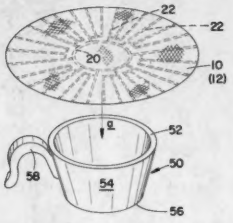
Filed May 23, 1979, Ser. No. 41,711

Int. Cl.³ B01D *35/38*

U.S. Cl. 210—474 **19 Claims**

1. A permanent, reuseable beverage filter which is self-folding between a first generally flat storage condition and a second generally cup-shaped filtering condition as it is inserted into a generally cup-shaped filter support, said filter comprising:

a thin flexible filter material having opposed faces, an outer peripheral edge and a porosity adapted to filter a beverage passing therethrough to a desired extent; and, a support skeleton affixed to one face of said filter material for giving support thereto in said first condition while allowing selective folding thereof between said first and second conditions, said support skeleton including a central portion generally centrally disposed on said filter material and configured to define a filter bottom area when said filter is received in said filter support and further including a



plurality of skeleton ribs at spaced intervals around said central portion extending outwardly thereof toward said filter material outer peripheral edge, said ribs providing support for said filter material outwardly of said skeleton central portion and adapted to provide a generally cup-shaped configuration therefor when said filter is inserted into said filter support, a plurality of adjacent ones of said ribs being connected with one another along the length thereof outwardly of said central portion only by said filter material and not by any portions of said skeleton for providing free movement of such adjacent ribs toward one another when said filter is formed into said cup-shaped condition from said generally flat condition.

4,271,025
LAYERED FILTER CARTRIDGE WITH INTERNAL BYPASS CHANNELS

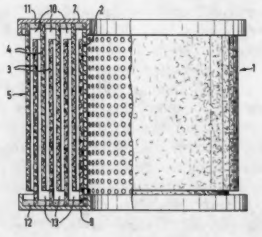
Hans Erdmannsdörfer, Ludwigsburg, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,237

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904858

Int. Cl.³ B01D *29/06*

U.S. Cl. 210—487 **6 Claims**



1. A filter cartridge for a liquid-straining filter assembly comprising in combination:

a perforated central sleeve serving as a support member;

first and second filtering strips overlying one another and surrounding the central sleeve in the form of two inter-

meshing spiral members which form a filter body with a plurality of filtering layers constituted alternatingly by one or the other filtering strip; and

two end discs covering the axial ends of the filter body, at least one end disc having a central opening which, in cooperation with the central sleeve, forms a flow passage for a radial flow of the liquid through the filter body; and wherein

the material of at least one filtering strip is creped transversely to its longitudinal direction so that the ridges and grooves of overlying layers form flow channel portions through which can take place an axial flow between the filtering strips;

the intermeshing spiral members formed by the first and second filtering strips are offset from one another in the axial sense so that the spiral edge of each filtering strip protrudes axially towards one end disc while being recessed from the other; and

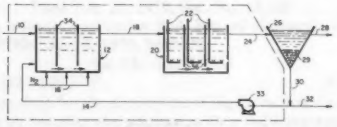
the axially protruding spiral edges of the filtering strips are in sealing contact with the two end discs so that a continuous zigzag-shaped flow channel is formed between the overlying layers of filtering strip and the end discs and direction-reversing bypass flow gaps are formed between the axially recessed spiral edges of the filtering strips and the end discs.

4,271,026

CONTROL OF ACTIVATED SLUDGE WASTEWATER TREATING PROCESS FOR ENHANCED PHOSPHOROUS REMOVAL

Michael S. Chen, Macungie; Eugene J. Greskovich, and Marshall L. Spector, both of Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 9, 1979, Ser. No. 83,196
Int. Cl.³ C02F *3/30*
U.S. Cl. 210—605 **26 Claims**



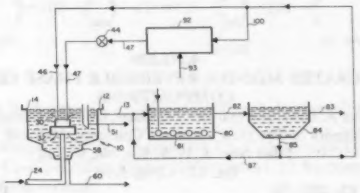
1. In an activated biomass process which inhibits the proliferation of filamentous biomass and effects the storage of phosphates in the biomass by first mixing recycled activated biomass with a phosphate- and BOD-containing influent to form a mixed liquor having both liquid and solid components and initially treating the mixed liquor under anaerobic conditions such as tc be substantially free of oxygen and oxidizing agents and to contain a concentration of less than about 0.7 ppm dissolved oxygen; thereby effecting selective production of nonfilamentous microorganisms capable of sorbing BOD under both anaerobic and oxidizing conditions and capable of accumulating phsophates under oxidizing conditions; subjecting the anaerobically treated mixed liquor to a subsequent oxygenating treatment by contact with oxygen-containing gas admitted to said treatment under oxic conditions such as to have maintained in the treatment a dissolved oxygen content of at least about 1 ppm to oxidize BOD in the mixed liquor to cause further removal of BOD from the liquid component and to cause accumulation of phosphates in the solid biomass component; subsequently separating the oxically treated mixed liquor into supernatant liquid and biomass; and returning a portion of the separated biomass to an initial anaerobic treatment to provide the activated biomass admixed therein with the influent; the improvement which comprises maintaning within the process system encompassing the initial anaerobic treatment and extending through the process up to, but not including, the separating step and including any internal recycle streams, a BOD_5 to phosphorous (BOD/P) ratio from about 5:1 up to about 50:1, wherein BOD_5 is expressed as milligrams of soluble BOD_5, exclusive of BOD attributable to ammonia, per liter of influent and P is soluble phosphate expressed as milligrams of elemental phosphorous per liter of influent, and a food to biomass (F/M) ratio from about 0.09 up to an upper limit of about 1.4 wherein F is the total weight of soluble BOD_5 introduced into the process per 24 hour day, and M is the weight of volatile suspended solids in the process system.

4,271,027

SEWAGE TREATMENT SYSTEM AND PROCESS

Earl M. Kelly, Hillsborough, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 859,768, Dec. 12, 1977, Pat. No. 4,173,534, which is a continuation-in-part of Ser. No. 728,480, Sep. 20, 1976, Pat. No. 4,082,671. This application Apr. 2, 1979, Ser. No. 25,804
The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.
Int. Cl.³ C02B *3/00*; B01D *21/10*
U.S. Cl. 210—609 **21 Claims**



1. An apparatus for the concomitant treatment of raw sewage and secondary sewage sludge from a secondary clarifier comprising:

a. a tank having an open top and a generally upstanding sidewall to contain a body of liquid;

b. an upper feedwell mounted in said tank;

c. pressurized aeration means connected in liquid flow communication with said upper feedwell for forming a stream of aerated liquid at superatmospheric pressure and for introducing the aerated liquid into said upper feedwell;

d. first feed means connected in liquid flow communication between the secondary clarifier and said upper feedwell for introducing secondary sludge thereinto for mixing with the aerated liquid and distribution by said upper feedwell into said tank;

e. a lower feedwell mounted in said tank below said upper feedwell and second feed means connected in liquid flow communication between a source of raw sewage and said lower feedwell for introducing raw sewage thereinto for distribution by said lower feedwell into said tank below the aerated secondary sludge introduced through said upper feedwell;

f. a continuous, upstanding partition wall mounted in said tank generally concentric and radially outward of said upper feedwell to define a confined liquid zone surrounding said upper feedwell and to define a generally annular space between said partition wall and said tank sidewall;

g. means mounted on said sidewall for drawing liquid from the surface of the body of liquid contained in said annular space to maintain a predetermined liquid level in said tank;

h. float collection means mounted within said confined liquid zone for collecting solids floating on the surface of the liquid within said confined zone; and

i. sediment collection means connected in communication with the bottom of said tank for collecting and discharging sediment from said tank.

4,271,028

PROCESS FOR PURIFYING EFFLUENTS CONTAINING PROTEINS

Hans-Rudolf Marfurt, and August Zurrer, both of Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 12,673, Feb. 15, 1979, abandoned, which is a continuation of Ser. No. 808,763, Jun. 22, 1977, abandoned. This application Nov. 30, 1979, Ser. No. 99,233
Claims priority, application Switzerland, Jul. 2, 1976, 8504/76
Int. Cl.[3] C02F *1/56*
U.S. Cl. 210—727 9 Claims

1. A process for purifying effluents containing proteins which process comprises treating said effluent with a basic water-soluble aminoplast flocculant which is a formaldehyde-dicyandiamide condensation product, to flocculate said proteins, agglomerating the resulting flocculated proteins by electrolysis in the presence of a sacrificial aluminum or aluminum alloy anode and an electrically conductive cathode, and removing the resulting agglomerated and flocculated proteins from said effluent.

4,271,029

HYDRATED $MG(NO_3)_2$ REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1979, Ser. No. 90,730
Int. Cl.[3] C09K *5/06*
U.S. Cl. 252—70 17 Claims

1. A reversible liquid/solid phase change composition comprising hydrated $Mg(NO_3)_2$ and as a nucleating additive, one or more of $MgSO_4$, $CaSO_4$, $CuSO_4$, $NiSO_4$, $CoSO_4$ or $ZnSO_4$, added to the composition in an amount effective to suppress average supercooling of the hydrated $Mg(NO_3)_2$ liquid phase to about 2° C. or less.

4,271,030

POURABLE LIQUID COMPOSITIONS

John M. Brierley, Wirral; John S. Parsons, Deeside; James R. Trueman, and Robert A. Jones, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,793
Claims priority, application United Kingdom, Nov. 18, 1977, 48108/77; Jun. 16, 1978, 27176/78
Int. Cl.[3] C11D *3/14, 3/395, 11/04, 17/08*
U.S. Cl. 252—98 18 Claims

1. An aqueous colored liquid bleach composition, having a pH of at least 9.8 and having a yield stress value of less than 1 dyne per square centimeter at 20° C., comprising a chlorine bleach compound in an amount of 1–15% by weight of available chlorine, from 0.01–0.2% by weight of a particulate bleach-stable pigment having a particle size within the range of 0.1–50 microns, which is maintained in suspension by a flocculate dispersed in an aqueous medium, the flocculate filling at least 50% of the volume of the aqueous medium, said flocculate being obtained from 0.05–20% by weight of the composition of a precipitated organic floc-structure forming detergent active material, selected from the group consisting of a precipitated C_{10}–C_{18} alkylsulfate, a precipitated C_{10}–C_{18} alkane sulfonate, a precipitated C_{12}–C_{18} alkylbenzene sulfonate, a precipitated calcium fatty acid soap, and mixtures thereof.

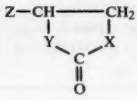
4,271,031

COLOR STABILIZED NONIONIC SURFACTANTS AND ALKALINE CLEANSER FORMULATIONS CONTAINING THESE SURFACTANTS

Knut Oppenlaender, 23 Otto-Dill-Strasse, 6700 Ludwigshafen; Rainer Strickler, 14 Schroederstrasse, 6900 Heidelberg; Johannes Perner, 19 B Kiesstrasse, 6730 Neustadt 1, and Wolfgang Trieselt, 1 Alwin-Mittasch-Platz, 6700 Ludwigshafen, all of Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,469
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910402
Int. Cl.[3] C09K *15/22;* C11D *1/72, 3/28, 3/395*
U.S. Cl. 252—156 2 Claims

1. A color-stabilized nonionic surfactant which contains chemically bonded poly(alkylene oxide) groups with terminal hydroxyl groups, wherein the color stabilizer is from 0.1 to 5% by weight, based on surfactant, of one or more compounds of the formula



where X is O, CH_2, C_2H_4 or C_3H_6, Y is O or NH and Z is H, CH_3 or CH_2OH.

2. A strongly alkaline cleanser containing a color-stabilized surfactant as claimed in claim 1 as the active ingredient.

4,271,032

POLYCARBOXYLIC ACIDS AND ESTERS IN DETERGENT FORMULATIONS AND THEIR USE

Jack H. Kolaian, Wappingers Falls, and Richard F. Love, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,729
Int. Cl.[3] C11D *3/20*
U.S. Cl. 252—174.19 3 Claims

1. A process for removing the soil from soiled cellulosic fabric in an aqueous laundering environment consisting essentially of contacting the soiled fabric to be cleaned in the aqueous environment with a detergent composition having as its active components:

from about 0.05 to 5 parts by weight of at least one saturated linear aliphatic carbon-carbon backbone polycarboxylic acid

selected from the group consisting of 1, 2, 4-cyclopentane tricarboxylic acid and 2, 3, 5-tricarboxycyclopentane acetic acid,

and at least one member selected from the group consisting of

(a) from about 0 to 5 parts by weight of a builder material, and

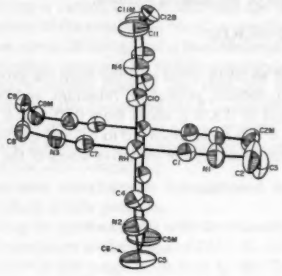
(b) from about 1 to 10 parts by weight of detergent additive material and

continuing said contact of the soiled fabric with the aqueous laundering environment until substantially all of the soil has been removed from said soiled fabric.

4,271,033
TRANSITION METAL COMPLEX CATALYSTS

Harry B. Gray, Pasadena, Calif., and Kent R. Mann, Roseville, Minn., assignors to California Institute of Technology, Pasadena, Calif.

Filed Aug. 20, 1979, Ser. No. 68,100
Int. Cl.[3] C07D *301/04*; B07D *301/22*
U.S. Cl. 252—188.3 R 19 Claims



1. An oxidizing reagent comprising the combination of a dimeric, dinuclear transition metal complex containing four binucleating diisocyanide bridge ligands and a secondary oxidant which is a stronger oxidizing agent than the complex.

4,271,034
PROCESS OF DENITRATION OF HIGHLY RADIO-ACTIVE WASTE SOLUTIONS

Franz-Josef Gattys, Neu-Isenburg, Fed. Rep. of Germany, assignor to F. J. Gattys Ingenieurbüro, Neu-Isenburg, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,296
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807324; Jan. 8, 1979, [illegible]00478
Int. Cl.[3] G21F *9/06*
U.S. Cl. 252—301.1 W 5 Claims

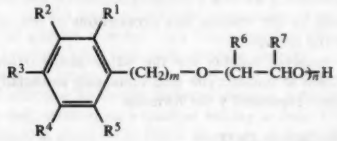
1. In a process for the denitration of highly radioactive waste solutions by reacting the solution with a reducing agent, the improvement which comprises carrying out the reaction with paraformaldehyde as the reducing agent.

4,271,035
LIQUID SCINTILLATOR SOLUTION

Tomoo Saito, Sagamihara; Yumiko Nishiyama, Hatano; Kazuo Watanabe, Yokohama; Naoko Taki, Kawasaki, and Naotake Morikawa, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,994
Claims priority, application Japan, Nov. 16, 1978, 53/140501
Int. Cl.[3] C09K *11/06*
U.S. Cl. 252—301.17 5 Claims

1. A liquid scintillator solution which consists of a polyalkylene glycol derivative of the formula:



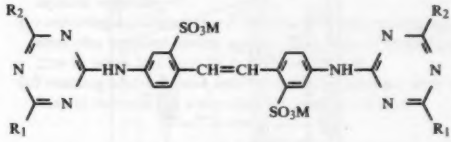
wherein R^1 to R^5 are each a hydrogen atom, a straight chain or branched chain alkyl group having 1 to 10 carbon atoms or a cyclohexyl group, R^6 and R^7 are each a hydrogen atom or a methyl group provided that both R^6 and R^7 are not methyl groups, m is 0 or 1 and n is a value between 2 and 15; and a scintillator.

4,271,036
COLORLESS FORMULATIONS OF OPTICAL BRIGHTENERS FROM THE SERIES OF BIS-TRIAZINYLAMINO-STILBENE-DISULFONIC ACID COMPOUNDS

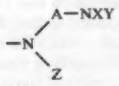
Klaus Uhl, Bad Soden am Taunus; Hans Frischkorn, Hofheim am Taunus, and Thomas Martini, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,665
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902965
Int. Cl.[3] C09K *11/06*
U.S. Cl. 252—301.23 5 Claims

1. Colorless formulation of optical brighteners of the formula



in which R_1 denotes C_1–C_5-alkoxy, anilino, halogenoanilino or morpholino, R_2 denotes C_1–C_5-alkoxy, morpholino or a group of the formula $—NR_3R_4$, R_3 denotes C_2–C_4-hydroxyalkyl, R_4 denotes C_1–C_5-alkyl or C_2–C_4-hydroxyalkyl, or R_2 denotes a group of the formula



in which A denotes C_2–C_6-alkylene, X denotes a group of the formula $—COR_5$ or $—SO_2R_5$, R_5 denotes C_1–C_5-alkyl, C_4–C_8-cycloalkyl, phenyl, or tolyl, Y denotes hydrogen or C_1–C_5-alkyl and Z denotes hydrogen, C_1–C_5-alkyl, C_4–C_8-cycloalkyl or a group of the formula —A—NXY, and M denotes an alkali metal atom or hydrogen atom, which are obtainable by heating a brightener of the above formula together with an oxyalkylate of the formula

$$R—X(C_2H_4O)_y(C_3H_6O)_zH$$

in which R denotes C_8–C_{20}-alkyl or -alkenyl or mono-, di- or tri-C_1–C_{12}-alkylphenyl, X denotes an oxygen atom or a group of the formula $=N—(C_2H_4O)_y(C_3H_6O)_zH$, —CONH— or —COO— and y and z denote numbers, the sum of which is 1 to 100, or R—X together denote the hydroxyl group and y and z denote numbers, the sum of which is 1 to 500, preferably 1 to 40.

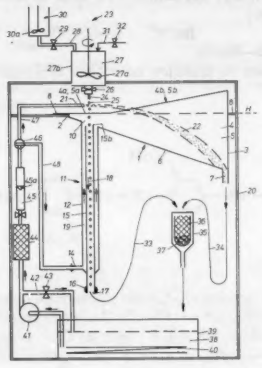
4,271,037
DEVICE FOR THE PRODUCTION OF SOL-GEL GLOBULES IN COARSE AND FINE FRACTIONS

Werner A. Hausmann, Staufen, Switzerland, assignor to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hoschschule, Zurich, Switzerland

Filed Mar. 19, 1980, Ser. No. 131,819
Int. Cl.[3] B01J *19/06*
U.S. Cl. 252—359 R 5 Claims

1. A device for the production of sol-gel globules, especially green sol-gel globules for sphere-pac nuclear fuel, in at least one each coarse and fine globule fraction, by dripping a sol-liquid into a vertical gelling stream for the coarse fraction and

scattering of at least one sol-liquid jet in a horizontal gelling stream for the fine fraction in optional subsequent processes, the device comprising a support, a ribbon nozzle mounted on said support for the formation of a horizontal gelling stream, a vat horizontally mounted on said structure for the reception of said gelling stream, said vat having a narrow first end wall and a narrow second end wall interconnected by spaced side walls and a bottom wall declining from said first to said second end walls, said first end wall lying in the vicinity of said ribbon nozzle and said bottom wall having an outlet adjacent said second end wall, a vertical gelling column depending from said bottom wall in open communication with said vat and lying near said nozzle, a tubular spout on said column for feeding



gelling liquid into said column and downwardly therethrough as a vertical gelling stream, means connected to said ribbon nozzle and to said spout for optionally feeding gelling liquid thereto from a gelling liquid supply, said column having a bottom outlet for the removal of the vertical gelling stream, a sol-liquid feed device mounted on said structure above said column and above said ribbon nozzle, said feed device including nozzle means for optionally delivering sol-liquid droplets from a sol-liquid supply onto the vertical gelling stream when the gelling liquid is fed through said spout for thereby forming coarse sol-gel globules, and for delivering jets of fine sol-liquid from the sol-liquid supply to the horizontal gelling stream when the gelling liquid is fed through said ribbon nozzle for thereby forming fine sol-gel globules.

4,271,038

CATALYSTS FOR THE HYDROFORMYLATION OF OLEFINICALLY UNSATURATED COMPOUNDS

Frederick A. Pesa, Aurora, and Thomas A. Haase, University Heights, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 17, 1979, Ser. No. 104,644

Int. Cl.³ B01J *31/22*

U.S. Cl. 252—428 **9 Claims**

1. A catalyst composition comprising cobalt carbonyl and a porphyrin promoter ligand, wherein the molar ratio of the cobalt carbonyl to the porphyrin promoter is in the range of about 0.1:1 to about 20:1.

4,271,039

CATALYST AND DEHYDROGENATION PROCESS

Robert J. Statz, and James K. Doty, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 24,858, Mar. 28, 1979, Pat. No. 4,232,174. This application Jan. 28, 1980, Ser. No. 115,755

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **3 Claims**

1. A catalyst of the general formula:

$$Me_aCr_bFePb_cP_dO_e$$

wherein Me is an alkali metal selected from the group consisting of lithium, sodium, potassium, rubidium, and cesium, a is about from 0.01 to 0.3, b is about from 0.05 to 0.4, c is about from 0.6 to 1.0, d is about from 1.0 to 6.0 and e is sufficient to provide oxygen to satisfy the oxidative states of the remaining components.

4,271,040

CATALYST AND PROCESS FOR PRODUCING METHACRYLIC ACID

Sargis Khoobiar, Kinnelon, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Continuation-in-part of Ser. No. 973,354, Dec. 26, 1978, Ser. No. 972,745, Dec. 26, 1978, Ser. No. 972,743, Dec. 26, 1978, Ser. No. 973,495, Dec. 26, 1978, Ser. No. 27,632, Apr. 6, 1979, Ser. No. 27,633, Apr. 6, 1979, Ser. No. 27,634, Apr. 6, 1979, Ser. No. 27,635, Apr. 6, 1979, and Ser. No. 47,860, Jun. 12, 1979. This application Oct. 3, 1979, Ser. No. 81,406

Int. Cl.³ B01J *27/18, 23/28, 23/18*

U.S. Cl. 252—437 **19 Claims**

1. A catalyst suitable for the vapor-phase oxidation of methacrolein to methacrylic acid consisting essentially of the composition expressed by the formula:

$$Mo_{12}Cu_aP_bSb_cA_dB_eO_x$$

where: a=0.05–3; b=0.1–5; c=0.01–3; d=0.1–3; e=0.01–3; and x=a value determined by the valence and proportions of the other elements of the formula, where A is Cs and/or Ca and B is one more elements selected from the group consisting Ni, Zn, Ru, Rh, Pd, Pt, As, K, Rb, Sr, Ba, Cr, V, Nb, W, Mn, Re, and rare earth metals including La.

10. A catalyst suitable for the vapor-phase oxidation of methacrolein to methacrylic acid consisting essentially of the composition expressed by the formula:

$$Mo_{12}Cu_aP_bSb_cCs_dO_x$$

where: a=0.05–3; b=1–2; c=0.01–3; d=0.1–3; and x=a value determined by the valence and proportions of the other elements of the formula.

13. A catalyst suitable for the vapor-phase oxidation of methacrolein to methacrylic acid consisting essentially of the composition expressed y the formula:

$$Mo_{12}Cu_aP_bSb_cCa_dO_x$$

where: a=0.05–3; b=1–2; c=0.01–3; d=0.1–3; and x=a value determined by the valence and proportions of the other elements of the formula.

4,271,041

HIGH SURFACE AREA MOLYBDENUM OXYCARBIDE CATALYSTS

Michel Boudart, Portola Valley, Calif., and Lucien E. Leclercq, Poitiers, France, assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 8, 1979, Ser. No. 938,822

Int. Cl.[3] B01J *21/18, 27/24;* C01B *31/00*

U.S. Cl. 252—438 16 Claims

1. The product prepared by carburizing molybdenum oxycarbide having a carbon content less than the stoichiometric carbon content of the compound Mo_2C, a specific surface area greater than about 20 m^2/g, and a face-centered cubic lattice.

8. The product prepared by nitriding molybdenum oxycarbide having a carbon content less than the stoichiometric carbon content of the compound Mo_2C, a specific surface area greater than about 20 m^2/g, and a face-centered cubic lattice.

13. Process for preparing a molybdenum oxycarbide of high specific surface area comprising:

(a) vaporizing molybdenum hexacarbonyl in a reducing atmosphere at low pressure,

(b) reacting the product of (a) with the reducing atmosphere at a temperature in the range of 1373° K. to 2073° K. and a pressure in the range of 20 Torr to 100 Torr, and

(c) condensing the vapors in a substantially nonoxidizing atmosphere.

4,271,042

PROCESS FOR DEMETALATION AND DESULFURIZATION OF PETROLEUM OILS

Stephen M. Oleck, Moorestown; Howard S. Sherry, Cherry Hill, both of N.J.; Ronald H. Fischer, Oakton, Va., and Donald Milstein, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 862,306, Dec. 20, 1977, abandoned, which is a division of Ser. No. 807,764, Jun. 17, 1977, Pat. No. 4,089,774, which is a continuation-in-part of Ser. No. 608,604, Aug. 28, 1975, abandoned. This application Aug. 10, 1979, Ser. No. 65,707

Int. Cl.[3] B01J *27/02, 23/16, 23/85, 24/04*

U.S. Cl. 252—439 7 Claims

1. A method for preparing a hydrodemetalation-desulfurization catalyst which comprises: converting a gamma type alumina or alumina hydrate of the Boehmite variety to an alumina comprising Delta and/or Theta phase alumina, said conversion induced by a first calcination; intimately mixing said converted alumina with 40% to 125% of its weight of technical grade Boehmite; recalcining in a second calcination the composite to transform said admixed Boehmite to gamma alumina whereby forming a catalyst support consisting essentially of an intimate mixture of gamma alumina with Delta and/or Theta phase alumina, compositing with said catalyst support, in one or more steps, a Group VIB metal and an iron group metal in amounts effective to confer hydroprocessing activity to said support; and, recovering a catalyst having at least 45% of its pore volume in pores 30 to 150 A diameter, at least 10% of its pore volume in pores less than 30 A diameter, at least 15% of its pore volume in pores greater than 300 A diameter, a surface area of 125 to about 210 m^2/g, and a total pore volume of 0.4 to 0.65 cc/gm.

4,271,043

PILLARED INTERLAYERED CLAY PRODUCTS

David E. W. Vaughan, Columbia; Roger J. Lussier, and John S. Magee, Jr., both of Ellicott City, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 71,957, Sep. 4, 1979, and a continuation-in-part of Ser. No. 885,408, Mar. 10, 1978, Pat. No. 4,176,090, which is a continuation-in-part of Ser. No. 805,672, Jun. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 704,358, Jul. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 633,053, Nov. 18, 1975, abandoned. This application Oct. 1, 1979, Ser. No. 80,959

Int. Cl.[3] B01J *21/16*

U.S. Cl. 252—455 R 12 Claims

1. A process for preparing a pillared interlayered clay product having a high degree of ion exchange capacity which comprises:

(a) reacting a smectite clay with a mixture of a polymeric cationic hydroxy metal complex selected from the group consisting of polymeric cationic hydroxy aluminum and zirconium complexes and water to obtain a pillared interlayered smectite;

(b) calcining said interlayered smectite to obtain an interlayered clay product having greater than 50% of its surface area in pores less than 30 A in diameter; and

(c) reacting said calcined interlayered clay product with a base to increase the ion exchange capacity thereof.

4,271,044

CARRIER MATRIX FOR CATALYSTS AND PROCESS FOR ITS PRODUCTION

Gerhard Fratzer; Bernhard Beck, both of Rheinfelden; Erwin Dold, Wyhlen, and Hans Klebe, Rheinfelden, all of Fed. Rep. of Germany, assignors to Deutsche Gold-und Silber Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,581

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853547

Int. Cl.[3] B01J *21/04, 23/10, 23/86, 35/02*

U.S. Cl. 252—462 46 Claims

1. A carrier matrix for catalysts with flow-channels passing there through, with cross-flow effect as well as with enlarged geometric surface and improved retaining capacity as compared to catalysis-promoting carrier materials present in dip dispersion, comprising alternately smooth and corrugated, superposed layers of high temperature resistant and scale-resistant steel, wherein a layer of corrugated sheet metal alternates with a layer of smooth screen cloth, or one layer of smooth sheet metal alternates with a layer of corrugated screen cloth, or a layer of corrugated screen cloth alternates with a layer of smooth screen cloth.

4,271,045

ELECTRICALLY CONDUCTIVE LAYER AND METHOD FOR ITS PRODUCTION

Wolf-Erhard Steigerwald, Goethestrasse 1, 8740 Bad Neustadt, Saale; Peter Ambros, Jahnstrasse 6, 8741 Hohenroth, and Hermann Geyer, Eckart-Roder-Str. 13, 8789 Oberbach, all of Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 904,307

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—511 19 Claims

1. Electrically conductive composition comprising 10 to 95% by weight of a uniform mixture of minute electrically conductive particles in an electrically non-conductive, curable polymer, said electrically conductive particles comprising a semi-conductive material formed by pyrolysis of a carbon-containing compound and doped and/or coated with Group III--VIII elements of the Periodic Table, said elements being taken from the group consisting essentially of boron, silicon, germanium, phosphorous, aluminum, titanium, zirconium,

vanadium, chromium, tungsten, iron, cobalt, nickel, molybdenum, or mixtures thereof.

4,271,046

NOVEL NORCAMPHANYL-SUBSTITUTED PYRANS, METHOD FOR THEIR SYNTHESIS AND USE THEREOF IN PERFUMERY

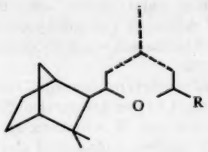
Brian J. Willis, Bergenfield, N.J., and John W. Dittrick, Flushing, N.Y., assignors to Fritzsche Dodge & Olcott, Inc., New York, N.Y.

Division of Ser. No. 950,598, Oct. 12, 1978. This application Sep. 13, 1979, Ser. No. 75,222

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **3 Claims**

1. A perfume composition comprising from about 0.001 to about 80 weight percent of a norcamphanyl-substituted pyran of the formula:



wherein the dashed lines represent either a carbon-carbon single bond or a carbon-carbon double bond such that two of the three dashed lines represent carbon-carbon single bonds; and wherein R is either hydrogen or a methyl group in admixture with at least one perfume ingredient.

4,271,047

HYDROGENATED INDENOPYRANS AND THEIR USE IN AROMATIC COMPOSITIONS

Jens Conrad, Hilden; Horst Upadek, Erkrath, and Klaus Bruns, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

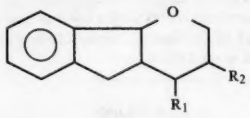
Filed Dec. 19, 1979, Ser. No. 105,254

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900421

Int. Cl.³ C07D *311/78;* **C11B** *9/00;* **A61K** *7/46*

U.S. Cl. 252—522 R **8 Claims**

1. A compound of the formula



wherein R_1 and R_2 are each independently hydrogen or a methyl radical, with the proviso that only one of R_1 and R_2 is a methyl radical.

3. An aromatic composition consisting essentially of from about 0.1 to 20% by weight, based on the total weight of the composition, of a compound of claim **1** and the remainder customary constituents of aromatic compositions.

4,271,048

9-HYDROXY-UNDECA-4,10-DIEN-1-AL

George H. Büchi, and Hans Wüest, both of Cambridge, Mass., assignors to Firmenich, S.A., Geneva, Switzerland

Filed Aug. 11, 1980, Ser. No. 176,790

Int. Cl.³ A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **3 Claims**

1. 9-Hydroxy-undeca-4,10-dien-1-al.

4,271,049

ELASTOPLASTIC COMPOSITIONS OF CURED DIENE RUBBER AND POLYPROPYLENE

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 10, 1979, Ser. No. 75,371

Int. Cl.³ C08L *7/00, 23/00*

U.S. Cl. 260—4 R **32 Claims**

1. An elastoplastic composition comprising a blend of crystalline polypropylene, in an amount sufficient to impart thermoplasticity to the composition, and cured rubber selected from the group consisting of natural or synthetic polyisoprene rubber, polybutadiene rubber and styrene-butadiene rubber comprising a copolymer of butadiene and up to about 25 weight percent of styrene or α-methylsytrene, the rubber being in an amount sufficient to impart rubberlike elasticity to the composition, which rubber is in the form of dispersed particles of a size small enough to maintain strength and thermoplasticity of the composition and wherein the rubber is cured with rubber curative selected from the group consisting of phenolic curative, urethane curative, and sulfur-donor curative comprising 0.2 parts of free sulfur or less per 100 parts of rubber in an amount sufficient so that the properties of the blend are such that the product of the true stress at break (TSB) times elastic recovery (R) is at least 70 megapascals (MPa).

4,271,050

VULCANIZABLE RUBBER COMPOSITIONS INHIBITED FROM PREMATURE VULCANIZATION BY METHYLENE THIOETHERS

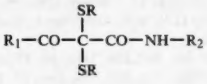
Otto W. Maender, and Eiichi Morita, both of Copley, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 23, 1979, Ser. No. 97,089

Int. Cl.³ C08F *8/34*

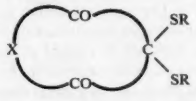
U.S. Cl. 260—5 **46 Claims**

1. A vulcanizable composition comprising sulfur-vulcanizable rubber, sulfur-vulcanizing agent, organic vulcanization accelerating agent and, in an amount effective to inhibit premature vulcanization, an inhibitor of the formulas



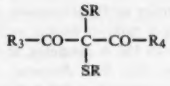
(I)

in which R is alkyl of 1–20 carbon atoms, cycloalkyl of 5–12 carbon atoms, benzyl, α-methylbenzyl, phenyl, or substituted phenyl wherein the substituents are lower alkyl, lower alkoxy, or halo, R_1 is R or anilino or substituted anilino wherein the substituents are lower alkyl, lower alkoxy or halo, and R_2 is phenyl or substituted phenyl as above,



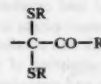
(II)

in which R is the same as above and X is o-phenylene or straight or branched alkylene of 2–4 chain carbon atoms,



(III)

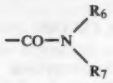
in which R is the same as above, R_3 is lower alkyl or lower alkoxy, and R_4 is carboalkoxy of 1–5 carbon atoms or



or R_4 may be lower alkyl provided that the vulcanization accelerating agent is 2-mercaptobenzothiazole, and

(IV)

in which R is the same as above and R_5 is cyano, carboalkoxy of 1–5 carbon atoms, substituted carbamoyl of the formula



in which R_6 is hydrogen or R, R_7 is R or carboalkoxy of 1–5 carbon atoms, or R_6 and R_7 together is alkylene or oxydialkylene of 4–8 carbon atoms which along with the nitrogen atom forms a heterocycle, or R_5 may be carbamoyl provided that the vulcanization accelerating agent is 2-mercaptobenzothiazole.

4,271,051

MODIFIED ALKYD RESINS AND THEIR USE AS LACQUER BINDERS

Helmut Eschwey, Düsseldorf-Benrath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 28, 1979, Ser. No. 79,964

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842919; Jun. 1, 1979, 2922370

Int. Cl.³ C08L *67/00, 67/08;* **C09D** *3/64*

U.S. Cl. 260—22 M **10 Claims**

1. A process for the production of alkyd resin modified to contain free hydroxyl groups which comprises reacting alkyd resin having an acid number of from about 40 to 180 with glycide, glyerol, or a mixture thereof, until the acid number of the alkyd resin is from about 5 to 35 and the alkyd resin contains from about 5 to 30 percent by weight, based on the weight of the alkyd resin, of 2,3-dihydroxypropyl groups.

4,271,052

CARBOXYLATED NITRILE RUBBER VULCANIZATES

George C. Blackshaw, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Jun. 18, 1979, Ser. No. 49,110

Claims priority, application Canada, Jul. 17, 1978, 307575

Int. Cl.³ C08L *9/02, 13/00*

U.S. Cl. 260—23.7 N **8 Claims**

1. Improved vulcanizates consisting essentially of a carboxylated butadiene-acrylonitrile polymer having a molecular weight within the Mooney range (ML 1+4 at 100° C.) of about 40 to about 80 compounded with (a) at least one filler, (b) vulcanization active agents and (c) from about 2.5 to about 30 parts by weight of an epoxidized hydrocarbyl compound per 100 parts by weight of carboxylated butadiene-acrylonitrile polymer.

4,271,053

QUATERNARY AMMONIUM GRAFT COPOLYMERS FOR USE AS FLOCCULANTS AND METHOD OF PREPARING SAME

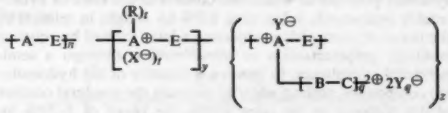
Donald R. Kelsey, and Russell L. Kreeger, both of Hillsborough, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,193

Int. Cl.³ C08L *63/00;* **C02B** *1/56*

U.S. Cl. 260—29.2 EP **20 Claims**

1. A quaternary ammonium graft copolymer which comprises polymeric units characterized by the general formula:



wherein n, y and z represent the relative molar equivalent fractions of each of the respective polymeric units in the graft copolymer, the sum of n, y and z being 1.0, the value of n varying from 0.00 to 0.99, the value of y varying from 0.00 to 0.99 and the value of z varying from 0.01 to 0.99; q is an integer greater than 1; A is the unit derived from at least one difunctional amine selected from the group consisting of primary amines and di(secondary)amines; t is an integer varying from 1 to 2; E is the unit obtained from a compound selected from the group consisting of epihalohydrins and diepoxides after its reaction with said difunctional amine; R is an organic radical derived from a quaternizing agent having the general formula RX, where X is the residual counter ion formed after quaternization; B is the unit derived from an organic dihalide having the general formula BY_2, where Y is Cl^-, Br^- or I^- with the proviso that such halogens are not attached to the same carbon atom; and C is the unit derived from an organic di(tertiary)amine after its reaction with said organic dihalide.

4,271,054

PREPARATION OF FURAN POLYMERS

Young D. Kim, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 19, 1980, Ser. No. 131,563

Int. Cl.³ C08L *61/06*

U.S. Cl. 260—29.3 **34 Claims**

1. A process for preparing a water-compatible furan polymer which comprises:

providing a composition containing at least one saturated aliphatic monohydric alcohol having 1–3 carbon atoms, water, furfuryl alcohol, aldehyde, phenolic compound, and a nitrogen-containing compound containing at least one

subjecting said composition condensation reaction at basic pH in the presence of a basic catalyst until the free aldehyde content of said composition is about 10 to 16%; and

then subjecting the composition to condensation reaction at an acidic pH for a time sufficient to provide a polymer composition having a viscosity of about 0.5 to about 5 stokes at 25° C., and thereby obtaining said water-compatible furan polymer.

4,271,055

PROCESS FOR PREPARING AN AQUEOUS LATEX BINDER FOR MANUFACTURING NONWOVENS EMPLOYING ULTRAFILTRATION TO FORM A LATEX HAVING LOW HYDROSOLUBLES

Jean-Claude Daniel, Fontenay-sous-Bois; Jacques Grossoleil, Paris, and Robert Roullet, Lyons, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 21, 1978, Ser. No. 898,954

Claims priority, application France, Apr. 22, 1977, 77 12161

Int. Cl.³ D04H *1/64;* C08F *6/16*

U.S. Cl. 260—29.6 TA **3 Claims**

1. Process for preparing an aqueous latex base binder of a synthetic polymer in which the content in the latex of hydrosoluble compounds is less than 0.5% by weight in relation to the polymer, comprising subjecting a latex formed by aqueous emulsion polymerization to ultrafiltration, through a semipermeable membrane, to remove a quantity of the hydrosoluble compounds, adding water to maintain the ponderal content of dry material in the latex within the range of 5–70% by weight.

4,271,056

HYDROPHILIC ACRYLONITRILE POLYMERS FOR MELT-SPINNING

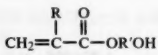
Denis Coleman, Stamford, Conn., and Anthony Koroscil, Pensacola, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 67,247, Sep. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 13,776, Feb. 21, 1979, abandoned. This application May 14, 1980, Ser. No. 149,780

Int. Cl.³ C08L *33/20*

U.S. Cl. 260—29.6 AN **7 Claims**

1. A melt-spinnable fiber-forming acrylonitrile polymer composition comprising from about 5 to 30 weight percent of water and, correspondingly, from about 95 to 70 weight percent of a polymer consisting of the polymerization reaction product of from about 80 to about 95 weight percent of acrylonitrile, from about 4 to 19 weight percent of a hydrophobic monomer copolymerizable with acrylonitrile and from about 1 to about 10 weight percent of a hydrophilic copolymerizable monomer of the structure:



wherein R is hydrogen or methyl and R′ is alkylene of 1 to 3 carbon atoms, said polymer having a kinematic molecular weight value in the range of about 30,000 to about 60,000, said molecular weight value being obtained from the relationship $\mu = 1/A(M_k)$ wherein μ is the average effluent time in seconds for a solution of 1 gram of polymer in 100 milliliters of 50 weight percent aqueous sodium thiocyanate solvent at 40° C. multiplied by the viscometer factor, A is the solution factor derived from a polymer of known molecular weight and M_k is the kinematic molecular weight.

4,271,057

WATER SETTING ION-POLYMER CEMENTS

Cyril F. Drake, Harlow, and Neil R. Adams, Wincle, near Macclesfield, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 6, 1979, Ser. No. 91,915

Claims priority, application United Kingdom, Nov. 8, 1978, 43601/78

Int. Cl.³ C08K *3/40*

U.S. Cl. 260—29.6 M **7 Claims**

1. A method of controlling the setting characteristics of an aqueous polycarboxylic acid cement mixture, the cross-linking agent comprising or being provided by a crushed glass composition selected from the group consisting of zinc oxide/boric oxide/alumina and fluoroaluminoborosilicate, the method including incorporating in said mixture a phosphate material by treating the surface of said crushed glass with sufficient phosphorus pentoxide in vapor phase or coating the surface of said crushed glass with sufficient alkaline metal phosphate salt selected from the group consisting of orthophosphate, metaphosphate, pyrophosphate and polyphosphate so as to extend the working time without substantially extending the setting time of the acid material.

4,271,058

STABLE AQUEOUS SOLUTIONS OF CERTAIN VINYL COPOLYMERS

Hans Trabitzsch, Seeheim; Josef Frieser, Weiterstadt; Achim Koschik, and Hermann Plainer, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,894

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829018

Int. Cl.³ C08L *33/02*

U.S. Cl. 260—29.6 M **10 Claims**

1. An aqueous solution comprising

(1) 20 to 99 percent by weight of water;

(2) 0.5 to 79 percent by weight of a water-soluble vinyl copolymer comprising

(A) 10 to 90 mol percent of units of an α,β-unsaturated carboxylic acid,

(B) 10 to 90 mol percent of units of a cationic vinyl monomer containing ammonium groups, and

(C) 0 to 80 mol percent of units of one or more further non-ionic comonomers copolymerizable with monomers (A) and (B); and

(3) 0.5 to 79 percent by weight of at least one water-soluble ionic or ionizable compound having a precipitating effect on an aqueous solution of polyacrylic acid.

4,271,059

COLOR-DEVELOPING COMPOSITION FOR PRESSURE-SENSITIVE RECORDING SHEET MATERIAL AND PROCESS FOR THE PREPARATION THEREOF CONTAINING PHENOLIC RESIN AND HINDERED PHENOL

Makoto Asano; Saburo Kawashima; Kenichi Sugimoto, and Tadashi Kobayashi, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

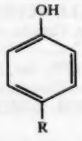
Division of Ser. No. 4,770, Jan. 19, 1979. This application May 14, 1980, Ser. No. 149,637

Claims priority, application Japan, Jan. 19, 1979, 54-4770

Int. Cl.³ C08G *8/12, 8/18, 8/24;* C08K *5/13*

U.S. Cl. 260—31.2 T **14 Claims**

1. A color-developing composition for pressure-sensitive recording sheet material of the self-contained type comprising (A) a copolymer obtained by reacting at least one p-alkylphenol selected from the group consisting of compounds having the general formula



(I)

where R is an alkyl radical containing from 1 to 12 carbon atoms, and phenol with formaldehyde and (B) from 1 to 20 parts by weight based on 100 parts by weight of (A) of a hindered phenolic compound selected from the group consisting of phenols having an alkyl, alkylene or hydroxyl substituent radical in at least the 2- or 6-position, or both, of the benzene ring and derivatives thereof, the copolymer and the hindered

phenolic compound being homogeneously dissolved in mutual solution.

4,271,060

SOLUTION POLYMERIZATION PROCESS

John S. Hubby, Brussels, Belgium, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 17, 1979, Ser. No. 76,104
Int. Cl.[3] C08K 5/01
U.S. Cl. 260—33.6 A 5 Claims

1. A process for producing solution polymerized polymer comprising:

(a) contacting in a contacting zone under polymerization conditions the reaction mixture comprising:
  (1) polymerizable diolefin monomer,
  (2) a volatile inert hydrocarbon diluent having 3 to 5 carbon atoms per molecule, and
  (3) a hydrocarbon solvent having 6 to 10 carbon atoms per molecule;
(b) removing from the contacting zone a reaction mixture effluent; and
(c) flashing said reaction mixture effluent under conditions to vaporize at least a portion of the diluent and solvent thereby concentrating the polymer product.

4,271,061

EPOXY RESIN COMPOSITIONS FOR SEALING SEMICONDUCTORS

Hideto Suzuki; Shunichi Hayashi, and Takahiro Yoshioka, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Mar. 6, 1980, Ser. No. 127,719
Claims priority, application Japan, Mar. 6, 1979, 54/26530; Jul. 31, 1979, 54/98380
Int. Cl.[3] C08K 63/00
U.S. Cl. 260—37 EP 20 Claims

1. In an epoxy resin composition for sealing a semiconductor element containing about 50 to 85% by weight of an inorganic filler, the improvement wherein the inorganic filler comprises at least a silica powder and a calcium silicate powder, and the amount of said calcium silicate powder is about 20 to 75% by weight and the amount of the silica powder is about 25 to 80% by weight, based on the total weight of the silica powder and calcium silicate powder.

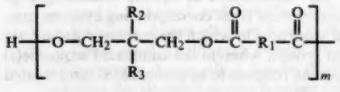
4,271,062

PIGMENT-CONTAINING COATING COMPOSITION HAVING A HIGH SOLIDS CONTENT

Ritse E. Boomgaard, Oegstgeest; Roelof Buter, Dieren, and Aleidus A. Kiffen, Angerlo, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Apr. 15, 1980, Ser. No. 140,574
Claims priority, application Netherlands, Apr. 19, 1979, 7903057
Int. Cl.[3] C08K 3/12; C08L 67/08
U.S. Cl. 260—39 P 9 Claims

1. A pigment-containing high solids coating composition prepared from a blend of ester diols as binder and a curing agent for the binder, characterized in that an ester diol there is used a mixture of (a) 20–80 mole % of a compound having the general formula:



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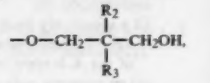
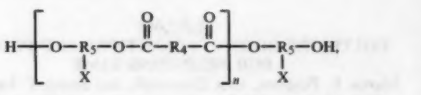


where R_1 represents the group formed by abstraction of the two carboxyl groups from maleic acid and/or fumaric acid and/or a cycloaliphatic and/or aromatic dicarboxylic acid having 8 to 20 carbon atoms and R_2 and R_3 may be the same or different and represent a hydrogen atom and/or a hydrocarbon group having 1 to 9 carbon atoms, and m is a number of 1–4, and of (b) 80–20 mole % of a compound having the general formula



where R_4 represents the group formed by abstraction of the two carboxyl groups from maleic acid and/or fumaric acid and/or a cycloaliphatic and/or aromatic dicarboxylic acid having 8 to 20 carbon atoms, and R_5 represents the group formed by abstraction of 3 hydroxyl groups from a tri- or tetravalent hydroxy compound having 3 to 8 carbon atoms in the main chain, and X represents an aliphatic acyloxy group having 6–25 carbon atoms, and n is a number of 1–4.

4,271,063

THERMOPLASTIC MOLDING COMPOSITIONS

Willem F. H. Borman, and Richard W. Campbell, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 26, 1978, Ser. No. 972,888
Int. Cl.[3] C08L 67/02
U.S. Cl. 260—40 R 35 Claims

1. A thermoplastic molding composition having improved physical properties, th composition comprising an intimate admixture of

(a) high molecular weight polyester resin;
(b) from about 0.1 to about 25% by weight, based on the total weight of the composition, of a copolymer consisting of ethylene and vinyl acetate; and
(c) a filler;

said intimate admixture of components (a), (b) and (c) having been provided by melt-blending the components and post-reacting the resultant blend in the solid state by heating the solid blend to a temperature below the melting temperature of the blend in a vacuum or in a stream of inert gas.

4,271,064

MODIFIED POLYESTER COMPOSITIONS

Ronald L. Dieck, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 8, 1979, Ser. No. 1,535
Int. Cl.[3] C08K 3/16, 3/40; C08L 67/06
U.S. Cl. 260—40 R 14 Claims

1. A thermoplastic composition consisting essentially of:

(a) a polyester composition consisting essentially of:
  (i) a poly(1,4-butylene terephthalate) resin;
  (ii) a blend of a poly(1,4-butylene terephthalate) resin and a poly(ethylene terephthalate) resin;
  (iii) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic/aliphatic or aliphatic polyester;
  (iv) a blend of (iii) and a poly(ethylene terephthalate) resin; or
  (v) a blend of (iii) and a poly-(1,4-butylene terephthalate) resin; and

(b) an impact modifier therefor consisting essentially of a combination of:

(i) a selectively hydrogenated block copolymer resin of a vinyl aromatic monomer (A) and a conjugated diene (B) of the A-B type; and

(ii) an aromatic polycarbonate resin, in an amount of up to 60 parts per 100 parts by weight of (a) and (b) together.

10. A composition as defined in claim **1** which also includes (c) a filler, reinforcing agent or a mixture thereof in an amount of from about **1** to about 60 parts by weight per 100 parts by weight of (a), (b) and (c) together.

4,271,065

POLYESTER RESIN COMPOSITIONS AND PROCESS FOR PREPARING SAME

Martin L. Feldman, East Brunswick, and James T. De Groff, Oldwick, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 119,719, Feb. 8, 1980, which is a division of Ser. No. 44,725, Jun. 1, 1979. This application Jul. 23, 1980, Ser. No. 171,624

Int. Cl.[3] **C08L** *67/00*

U.S. Cl. 260—40 R **16 Claims**

1. A polyester resin composition that comprises

(a) an unsaturated polyester resin formed by condensing a saturated dicarboxylic acid and an unsaturated dicarboxylic acid with a dihydric alcohol;

(b) an unsaturated monomer capable of reacting with the unsaturated polyester resin to form cross-linkages; and

(c) a thickening agent comprising

(1) 25% to 70% by weight of a thickener that is a Group II-A metal oxide or hydroxide and

(2) 30% to 75% by weight of an unsaturated polyester vehicle comprising an unsaturated polyester that is the product of the reaction of a dicarboxylic acid component containing 80 to 90 mole % of at least one unsaturated aliphatic dicarboxylic acid having 4 to 8 carbon atoms and 10 to 20 mole % of at least one saturated aromatic dicarboxylic acid with an alcohol component containing 40 to 60 mole % of at least one glycol having 2 to 6 carbon atoms and 40 to 60 mole % of at least one monohydric alcohol having 6 to 12 carbon atoms, in the amount of 0.4 mole to 0.6 mole of the dicarboxylic acid component per mole of the alcohol component.

4,271,066

PROCESS FOR DISPROPORTIONATING ROSIN, POLY-UNSATURATED FATTY ACIDS AND MIXTURES THEREOF

Kohtaro Matsuo, Mino; Satoshi Kawamura, Takatsuki, and Tatsumi Toshine, Yawata, all of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Nov. 5, 1979, Ser. No. 91,490

Int. Cl.[3] **C09F** *1/04, 7/08;* **B01J** *27/02, 27/08*

U.S. Cl. 260—97.5 **5 Claims**

1. A process for disproportionating resin, poly-unsaturated fatty acid or mixture thereof, which comprises conducting a disproportionation reaction in the presence of a catalyst comprising (A) at least one iodide selected from the group consisting of sodium iodide and potassium iodide and (B) at least one iron compound selected from the group consisting of iron, iron oxides, iron hydroxides and iron sulfides.

4,271,067

GLYCOPEPTIDE

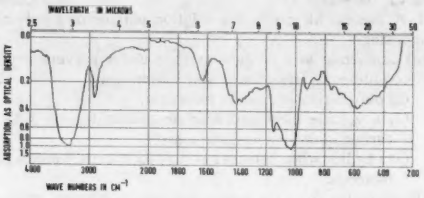
Andre Belloc, Vanves; Jean Florent, Boulogne-Billancourt; Jean Lunel, Paris; Denise Mancy, Charenton, and Jean-Claude Palla, Thiais, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jan. 21, 1977, Ser. No. 760,978

Claims priority, application France, Jan. 22, 1976, 76 01647

Int. Cl.[3] **C12P** *21/00;* **A61K** *37/00*

U.S. Cl. 260—112 R **11 Claims**



1. The glycopeptide herein designated 31,177 RP, which has the following characteristics: it is soluble in water to the extent of more than 1,000 g/l; its solubility decreases rapidly in aqueous-alcoholic and aqueous-acetone mixtures and drops to less than 0.1 g/l in anhydrous alcohols, acetone, hexane, ethyl acetate, diethyl ether and chlorinated solvents;

analysis of the products of acid hydrolysis shows principally lysine and glucose;

it contains carbon, hydrogen, oxygen, nitrogen and sulphur, the relative proportions being approximately: C=46.2% H=6.05% O=46.11% N=1.44% S=0.20%;

its molecular weight is between 10,000 and 20,000;

its optical rotation (c=0.4, water) is:

$[\alpha]_D^{20} = +149.5° \pm 2.5°$

$[\alpha]_{436}^{20} = +295° \pm 4.0°$

$[\alpha]_{365}^{20} = +448° \pm 5.5°$

it does not exhibit a characteristic absorption in the ultraviolet spectrum between 220 and 400 nm; and

its infra-red spectrum (determined on tablets of a mixture with KBr) shows principal absorption bands as follows: 3470 shoulder, 3400 shoulder, 3350 very strong, 3270 shoulder, 3100 shoulder, 3050 shoulder, 3000 shoulder, 2980 shoulder, 2930 strong, 2900 shoulder, 2830 shoulder, 2780 shoulder, 2540 shoulder, 2350 very weak, 2100 very weak, 1985 very weak, 1945 very weak, 1900 very weak, 1850 very weak, 1760 very weak, 1630 medium, 1450 shoulder, 1410 strong, 1370 weak, 1335 shoulder, 1305 shoulder, 1240 weak, 1160 strong, 1100 shoulder, 1075 shoulder, 1030 very strong, 935 shoulder, 920 medium, 850 medium, 785 shoulder, 770 shoulder, 760 medium, 720 shoulder, 700 medium, 640 shoulder, 610 shoulder, 580 medium, 525 weak, 440 shoulder, 410 shoulder and 370 shoulder cm^{-1}.

4,271,068

PROCESS FOR THE MANUFACTURE OF CYSTINE-CONTAINING PEPTIDES

Bruno Kamber, and Werner Rittel, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 296,406, Oct. 10, 1972, which is a continuation-in-part of Ser. No. 818,109, Apr. 21, 1969, abandoned. This application May 13, 1976, Ser. No. 685,857

Int. Cl.[2] **C07C** *103/52*

U.S. Cl. 260—112.5 R **9 Claims**

1. Process for the manufacture of cystine-containing peptides and derivatives thereof from corresponding cysteine-containing aminoacid sequences in which the mercapto groups are protected by trityl groups, wherein the aminoacid sequence(s) containing the cysteine residues to be combined is (are) treated

with iodine in a solvent in which both iodine and the peptide are at least partically soluble.

4,271,069

BETA-HCG PREPARATION AND METHOD

Yun-Yen Tsong, North Caldwell, N.J.; Gursaran P. Talwar, New Delhi, India; Samuel Koide, Dobbs Ferry, and Sheldon J. Segal, Hartsdale, both of N.Y., assignors to Population Council, Inc., New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 946,098
Int. Cl.[2] C07C *103/52*; H61K *37/00*
U.S. Cl. 260—112.5 R **10 Claims**

1. A method of purifying a preparation of a beta sub-unit of chorionic gonadotropin which includes steps of:

a. preparing an insolubilized anti chorionic gonadotropin alpha sub-unit serum, and

b. contacting a preparation of the beta sub-unit of chorionic gonadotropin with the insolubilized anti chorionic gonadotropin alpha sub-unit serum of step (a) under conditions permitting binding of said insolubilized alpha sub-unit with contaminants in the preparation of the beta sub-unit, the contaminants including chorionic gonadotropin and an alpha sub-unit thereof, and

c. separating the insolubilized material from the preparation of the beta sub-unit of chorionic gonadotropin.

4,271,070

CHEMICALLY-MODIFIED FIBER COLLAGEN HEMOSTATIC AGENTS

Teruo Miyata, Tokyo, Japan; Albert L. Rubin, and Kurt H. Stenzel, both of Englewood, N.J., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 5, 1980, Ser. No. 147,063
Int. Cl.[3] C07G *7/00*; C08L *89/06*
U.S. Cl. 260—123.7 **10 Claims**

1. An improved collagen hemostatic agent comprising native crosslinked fiber collagen of regularly staggered quaternary structure having a minimum molecular length of 7000 A°, a minimum molecular diameter of 20 A°, a minimum periodicity of 670–700 A°, and whose residual lysyl and carboxyl groups have been subjected respectively to at least one reaction selected from the group consisting of guanidination, esterification and guanidination-esterification to greatly enhance the net positive electrostatic charge of the fiber collagen.

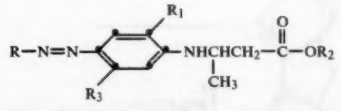
4,271,071

HETEROCYCLIC MONOAZO COMPOUNDS FROM ALKYL-3-(PHENYLAMINO)BUTYRATES

Gary T. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1979, Ser. No. 63,642
Int. Cl.[3] C07C *29/08*
U.S. Cl. 260—157 **11 Claims**

1. A compound of the formula



wherein

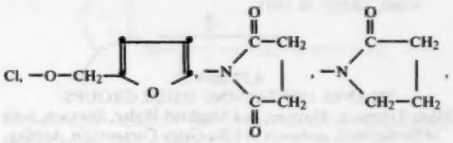
R is a heterocyclic radical which may be substituted, selected from 2-thiazolyl, 2-benzothiazolyl, 3-benzoisothiazolyl, 1,3,4-thiadiazol-2-yl, 1,2,4-thiadiazol-5-yl, 3-pyrazolyl, 2-thienyl, and 5-isothiazolyl;

R_1 is hydrogen, lower alkyl, or lower alkoxy;

R_2 is lower alkyl, cyclohexyl, benzyl, or phenyl;

R_3 is hydrogen, lower alkyl, lower alkoxy, alkanoylamino wherein the alkanoyl moiety is either straight or branched lower alkyl aroylamino, or cyclohexyl carbonylamino; and

wherein each of the alkyl moieties may be substituted with 1–3 of lower alkoxy, —O—C_2H_4—O—C_2H_4O—lower alkyl,



phenyl, phenoxy, cyclohexyl, cyclohexyloxy, NHCO—lower alkyl, —N(lower alkyl)$_2$, acyloxy,

—S—lower alkyl, or —SO_2 lower alkyl.

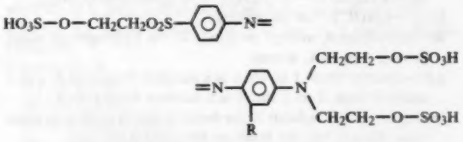
4,271,072

AZO DYESTUFFS CONTAINING -$SO_2CH_2CH_2OSO_3H$ AND -$N(CH_2CH_2OSO_3H)_2$ GROUPS

Johann Wenghoefer, East Greenwich; Dennis Messier, and James Thompson, both of Coventry, all of R.I., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 862,317, Dec. 20, 1977, abandoned. This application Aug. 13, 1979, Ser. No. 65,791
Int. Cl.[3] C09B *29/01, 29/085, 29/26, 62/51*
U.S. Cl. 260—207.3 **2 Claims**

1. A water soluble dyestuff having, in the form of the free acid, the formula:



wherein R is halogen; or salts thereof.

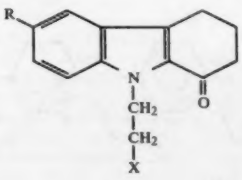
4,271,073

6-SUBSTITUTED-9-(2-HYDROXYETHYL)-1,2,3,4-TETRAHYDRO CARBAZOL-1-ONE

Heinz Bender; Rudi Beyerle, both of Frankfurt am Main; Karl-Heinz Keil, Offenbach am Main; Heinz G. Greve, and Kuno Reh, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main-Fechenheim, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,498
Int. Cl.[3] C07D *209/88, 241/38*
U.S. Cl. 260—315 **3 Claims**

1. 6,7-disubstituted 1,2,3,4-tetrahydrocarbazol-1-one of the formula II



(II)

wherein

R represents an alkyl or alkoxy group having 1 to 4 carbon atoms, a fluorine, chlorine or bromine atom and

X means —OH or a radical of the formula —O—SO_2R', wherein R′ stands for an alkyl radical having 1 to 3 carbon atoms, phenyl or tolyl.

4,271,074

SILANES CONTAINING IMIDE GROUPS

Dieter Lohmann, Muttenz, and Siegfried Wyler, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

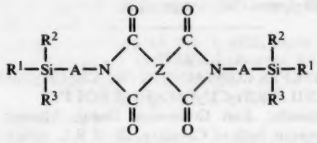
Filed Aug. 20, 1979, Ser. No. 67,864

Claims priority, application Switzerland, Aug. 30, 1978, 9154/78

Int. Cl.³ C07D *209/94*; B32B *9/04*

U.S. Cl. 260—326.26 **6 Claims**

1. A compound of the formula I



(I)

wherein

R^1 and R^2 independently of one another are methyl, ethyl, phenyl, vinyl, chlorine or a group —OR, R^3 is chlorine or —OR, R is alkyl having 1–10 C atoms, cycloalkyl having 5–8 C atoms or phenyl;

A is one of the divalent radicals $—(CH_2)_a—$, $—C(R^{10})_2—CH(R^{11})—$, $—(CH_2)_b—G—(CH_2)_c—$, phenylene—(CH_2)hd d—G—$(CH_2)_c$— or phenylene-$(CH_2)_d$;

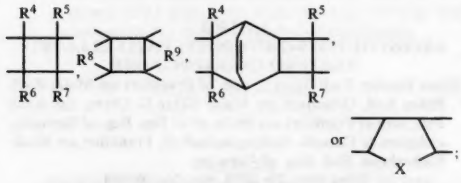
G is —CH(R″)— or phenylene;

R^{10} is hydrogen, methyl or ethyl, R^{11} is hydrogen or alkyl having 1 to 10 C atoms;

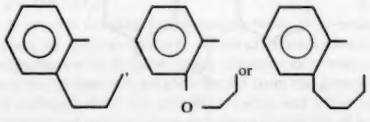
a is a number from 1 to 10, b is a number from 1 to 6, c is a number from 1 to 6 and d is a number from 0 to 6;

in these divalent radicals A the bond to the Si atom is in each case effected via the bond on the right-hand side,

Z is one of the groupings



R^4, R^5, R^6 and R^7 independently of one another are hydrogen, methyl, phenyl, —CN or halogen, R^8 and R^9 independently of one another are alkylene having 3 or 4 C atoms, oxaalkylene having 3 or 4 C atoms or are one of the radicals



X is $—CH_2—$ or —O—.

4,271,075

PROCESS FOR PRODUCING 3,3-BIS-(4-DIMETHYLAMINOPHENYL)-6-DIMETHYLAMINOPHTHALIDE

Mitsuru Nagata, and Kazuyuki Wakasugi, both of Yokohama, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,383

Claims priority, application Japan, Feb. 14, 1979, 54-15002

Int. Cl.³ C07D *307/88*

U.S. Cl. 260—343.4 **5 Claims**

1. In a process for producing 3,3-bis-(4-dimethylaminophenyl)-6-dimethylaminophthalide which comprises oxidizing an alkali metal salt of 2-[4,4′-bis-(dimethylamino)-benzhydryl]-5-dimethylaminobenzoic acid in an aqueous solution at pH of 8 to 14 with hydrogen peroxide, oxygen or air the improvement wherein said reaction is carried out in the presence of a catalyst comprising a cobalt complex soluble in aqueous alkaline solution.

4,271,076

TRICYCLIC LACTONES

Joseph J. Becker, Geneva, and Günther Ohloff, Bernex, both of Switzerland, assignors to Firmenich, S.A., Geneva, Switzerland

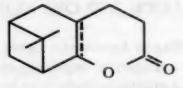
Filed Jul. 14, 1980, Ser. No. 168,149

Claims priority, application Switzerland, Aug. 31, 1979, 7899/79

Int. Cl.³ C07D *311/74*

U.S. Cl. 260—343.21 **3 Claims**

1. A compound of the formula



(I)

possessing a single or a double bond in the position indicated by the dotted line.

4,271,077

19-HYDROXY-19-METHYL-6-HYDROXY-7A-HOMO-PGI$_1$ COMPOUNDS

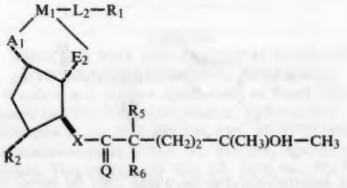
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507. This application Mar. 3, 1980, Ser. No. 126,510

Int. Cl.³ C07D *311/02*

U.S. Cl. 260—345.2 **2 Claims**

1. A prostacyclin-type compound of the formula



wherein A_1 is —O— (oxa) and E_2 is $—CH_2CH_2—$;

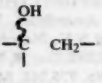
wherein L_2 is

(1) $—(CH_2)_j—$, wherein j is one to 4, inclusive,

(2) $—(CH_2)_q—CF_2—$, wherein q is one, 2, or 3; or

(3) —CH=CH—;

wherein M_1 is



wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) —$COOR_3$,
(2) —CH_2OH,
(3) —$CH_2N(R_7)(R_8)$,
(4) —CO—$N(R_7)(R_8)$,
(5) —CO—NH—SO_2—R_{15}, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{16},
wherein —(Ph)— is inter-phenylene and —(p-Ph) is inter-para-phenylene or para-phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-bisphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of 2 to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

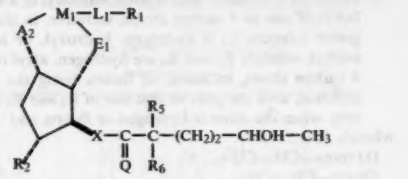
4,271,078

19-HYDROXY-6,9α-EPOXYMETHANO-PGF COMPOUNDS

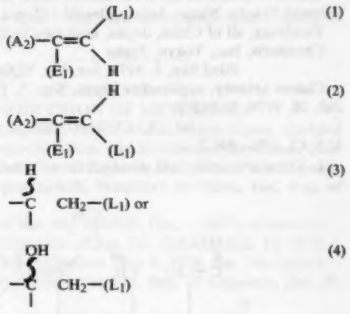
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,478
Int. Cl.³ C07D *311/02*
U.S. Cl. 260—345.2 **6 Claims**

1. A prostacyclin-type compound of the formula



wherein A_2 is —CH_2O— with —CH_2 bonded to the cyclopentane ring and E_1 is —CH_2—;
wherein L_1 is
(1) —$(CH_2)_n$—, wherein n is one to 5, inclusive,
(2) —$(CH_2)_p$—CF_2—, wherein p is 2, 3, or 4; or
(3) —CH_2—CH=CH—;
wherein M_1 is



wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;
wherein R_1 is
(1) —$COOR_3$,
(2) —CH_2OH,
(3) —$CH_2N(R_7)(R_8)$,
(4) —CO—$N(R_7)(R_8)$,
(5) —CO—NH—SO_2—R_{15}, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{16},
wherein —(Ph)— is inter-phenylene and —(p—Ph) is inter-para-phenylene or para-phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3

chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive, in the alkoxy group wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) $—CH_2CH_2—$.

4,271,079

5-(2,5-DIOXOTETRAHYDROFURYL)-3-METHYL-3-CYCLOHEXENE-1,2-DICARBOXYLIC ANHYDRIDE

Hiroshi Maeda; Nagao Ariga; Hiroshi Oikawa, and Hidemitsu Tominaga, all of Chiba, Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

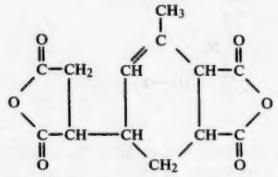
Filed Sep. 5, 1979, Ser. No. 72,642

Claims priority, application Japan, Sep. 7, 1978, 53-109115; Jul. 26, 1979, 54-94307

Int. Cl.³ C07D *307/89*

U.S. Cl. 260—346.3 **1 Claim**

1. Tetracarboxylic acid dianhydride of the formula:



4,271,080

PROCESS FOR THE PREPARATION OF TETRAHYDROFURAN

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,977

Int. Cl.³ C07D *307/08*

U.S. Cl. 260—346.11 **10 Claims**

1. A process for preparing tetrahydrofuran which comprises reacting a 1,4-dihalobutane with water in the vapor phase in the presence of a solid acid catalyst.

4,271,081

PROCESS FOR THE PREPARATION OF TETRAHYDROFURAN

Jawad H. Murib, and John M. Inskeep, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,978

Int. Cl.³ C07D *307/08*

U.S. Cl. 260—346.11 **16 Claims**

1. A process for preparing tetrahydrofuran which comprises reacting a 1,4-dihalobutane with water in the presence of a catalytically effective amount of strong acid to provide tetrahydrofuran.

4,271,082

4-METHYL-4-FURFURYLTHIO-PENTANONE-2

Reinerus J. Kleipool, Amersfoort, Netherlands, assignor to Naarden International N.V., Naarden-Bussum, Netherlands

Division of Ser. No. 967,596, Dec. 8, 1978, abandoned, which is a continuation of Ser. No. 776,763, Mar. 11, 1977, abandoned.

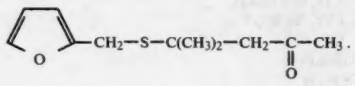
This application Nov. 19, 1979, Ser. No. 95,546

Claims priority, application Netherlands, Mar. 15, 1976, 7602689

Int. Cl.³ C07D *307/38*

U.S. Cl. 260—347.2 **1 Claim**

1. The compound having the formula



4,271,083

6-HYDROXY-1,4-BENZOQUINONE COMPOUNDS

Hiroshi Morimoto, Hyogo; Isuke Imada, Osaka; Masazumi Watanabe, Noborimachi, and Mitsuru Kawada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 573,158, Apr. 30, 1975, Pat. No. 4,139,545.

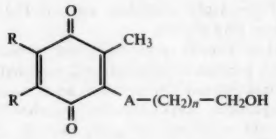
This application Nov. 15, 1978, Ser. No. 961,021

Claims priority, application Japan, May 2, 1974, 49-50003

Int. Cl.³ C07C *50/28*

U.S. Cl. 260—396 R **10 Claims**

1. A compound of the formula



wherein R represents alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, A represents $—CH_2—$, —CO— or

and n represents an integer of 1 to 8, or its ester.

4,271,084

GERMANIUM-CONTAINING ORGANIC POLYMER AND THE PROCESS FOR THE PRODUCTION OF THE SAME

Akira Ishikawa, Tokyo; Yukihito Ishida, Fujisawa; Shiro Ikegami, Funabashi; Hiroshi Satoh, Tokyo, all of Japan; Ryuichi Sato, 2310, Kamikoizumi, Oizumicho, Ora-gun, Gunma-ken, Japan; Setsuo Tomisawa, Tokyo, and Shigeru Toyoshima, Tokyo, both of Japan, assignors to Ryuichi Sato, Gunma, Japan

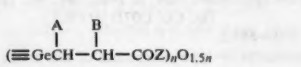
Filed Feb. 14, 1979, Ser. No. 12,151

Claims priority, application Japan, Mar. 1, 1978, 53-21992; Mar. 1, 1978, 53-21993

Int. Cl.³ C07F *7/30*

U.S. Cl. 260—429 R **8 Claims**

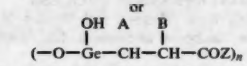
1. A germanium-containing organic polymer represented by the formula:



(III)

-continued

or

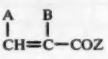


(IV)

wherein A represents a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, —COOH, —COOR (wherein R is an alkyl group having 1 to 3 carbon atoms),

B represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms; Z represents a hydroxy group, an alkoxy group having 1 to 3 carbon atoms or an alkyl group having 1 to 3 carbon atoms; and n is an integer greater than 3, inclusive.

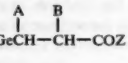
4. A process for producing germanium-containing organic polymer represented by the formula (III) or (IV) as given in claim 1 which comprises reacting a halogermanium-phosphoric acid complex obtained by treating germanium dioxide with hypophosphorous acid or a salt thereof in hydrohalogenic acid with a compound (I) represented by the formula:



(I)

wherein A is a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, —COOH, —COOR (wherein R is an alkyl group having 1 to 3 carbon atoms),

B is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms and Z is a hydroxy group, an alkoxy group having 1 to 3 carbon atoms or an alkyl group having 1 to 3 carbon atoms, to obtain a compound (II) represented by the formula:



(II)

wherein A, B and Z have the same meanings as defined above, and X is a halogen atom; and then dissolving said compound (II) in an organic solvent and adding water to the solution thus obtained so as to obtain a white needle crystalline polymer.

4,271,085

CIS-PLATINUM (II) AMINE LACTATE COMPLEXES

Alan R. Amundsen, Somerville, and Eric W. Stern, Mountainside, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Jun. 20, 1979, Ser. No. 50,235

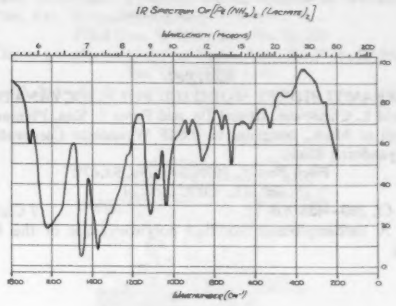
Int. Cl.[3] **C07F** *15/00*

U.S. Cl. 260—429 R **7 Claims**

1. A complex of the general formula:

cis-[Pt(II)A_2($C_3H_5O_3$)$_2$]

wherein the platinum, Pt, is in valence state II and is coordinated to A in a cis configuration; A is ammonia or a monodenate alkylamine; A_2 is a bidentate alkylamine; and $C_3H_5O_3$ is the lactate anion.



4,271,086

PRODUCTION OF METHANOL

Emil Supp, Dietzenbach; Heinz Jockel, Klein-Gerau; Gerhard Cornelius, Bergen-Enkheim, and Friedmann Marschner, Oberursel, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 856,565, Dec. 1, 1977, abandoned, which is a continuation of Ser. No. 724,032, Sep. 17, 1976, abandoned. This application May 4, 1979, Ser. No. 35,964

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603291

Int. Cl.[3] **C07C** *29/15, 27/06, 31/04*

U.S. Cl. 518—704 **2 Claims**

1. In the production of methanol from gaseous hydrocarbons having a lower C/H ratio than is stoichiometrically required to produce methanol the improvement comprising the steps of:

(a) mixing said hydrocarbons with water vapor and a carbon dioxide containing gas, the mixture being at a temperature of an inlet temperature of at least about 400° C.,

(b) feeding said mixture into a tubular reaction zone and catalytically reacting the mixture therein at about 830° to 930° C. and about 5 to 30 bars to produce a synthesis gas consisting essentially of hydrogen and oxides of carbon, said mixture being heated while being catalytically reacted,

(c) transferring heat from the hot syntheses gas to said mixture by withdrawing the synthesis gas through a convoluted or corrugated tube within the catalyst of each tubular member of said reaction zone in countercurrent and with indirect heat exchange to said mixture,

(d) cooling said synthesis gas and withdrawing condensate therefrom,

(e) catalytically converting said synthesis gas in a methanol synthesis zone at about 230° to 280° C. and about 30 to 150 bars,

(f) separating methanol from the product of said synthesis zone and withdrawing an exhaust gas, from said synthesis zone, said exhaust gas containing hydrogen, carbon dioxide and methane,

(g) thereafter adsorbing from said exhaust gas the carbon containing gaseous constituents, desorbing said constituents and mixing them with the hydrocarbons in step (a) before the latter are cracked, scrubbing the residual methanol synthesis exhaust gas with scrubbing liquor to dissolve the carbon dioxide, separating the carbon dioxide from the used scrubbing liquor and mixing it with the hydrocarbons in step (a) before they are cracked and (h)

the heat consumption per 1000 kg of pure methanol being in the range of 7.16 to 7.62 million kcal.

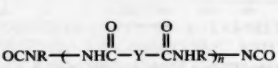
4,271,087

CARBAMYLBIURET-MODIFIED POLYISOCYANATES

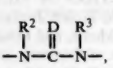
Donald L. Christman, Grosse Ile, and Peter T. Kan, Plymouth, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 8, 1979, Ser. No. 92,479
Int. Cl.[3] C07C *127/24*
U.S. Cl. 260—453 AB 7 Claims

1. A carbamylbiuret-modified polyisocyanate of the formula:



wherein n is an integer of from about 1 to about 20; R is a divalent hydrocarbon radical containing from about 1 to about 18 carbon atoms; and Y is the divalent radical



wherein D is selected from the group consisting of O, S, and NH; R^2 and R^3 are independently selected from the group consisting of aryl of from about 6 to about 18 carbon atoms, alkyl containing from about 1 to about 6 carbon atoms, and cycloalkyl containing from about 3 to about 7 carbon atoms, provided that each of R^2 and R^3 differs from R.

4,271,088

HIGH SELECTIVITY CYANOALKYLATION PROCESS

Walter A. Butte, Jr., West Chester, and Wesley R. Cherry, Prospect Park, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 916,394, Jun. 16, 1978, Pat. No. 4,171,322. This application May 18, 1979, Ser. No. 40,248
The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.
Int. Cl.[3] C07C *120/00*
U.S. Cl. 260—465.6 10 Claims

1. In a process for cyanoalkylation of an organic compound having a labile hydrogen atom and selected from the group consisting of monohydric alcohol, polyhydric alcohol, and phenols and wherein the compound is contacted with a cyanoalkene selected from the group consisting of crotononitrile, beta-vinylacrylonitrile and $CH_2{=}C(R)CN$ wherein R is a C_1–C_5 hydrocarbon radical and the contacting is under cyanoalkylation conditions in a reaction zone and wherein the reaction tends to be accompanied by polymerization of the cyanoalkene with resulting decrease in yield and purity of the desired cyanoalkylation product, the improvement which comprises terminating the reaction when a total of about 60–96% of the cyanoalkene required for complete cyanoalkylation of said compound has been converted to cyanoalkylated products, polymers, and unknowns, whereby the amount of polymers and unknowns is less than that obtained in the cyanoalkylation of said compounds in which the conversion of the cyanoalkene exceeds the above recited upper limit of about 96%, and separating cyanoalkylation product in the reaction product from unreacted cyanoalkene.

4,271,089

CYANOALKYLATION PROCESS

Walter A. Butte, Jr., West Chester, and Wesley R. Cherry, Prospect Park, Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 916,393, Jun. 16, 1978, abandoned. This application Jul. 5, 1979, Ser. No. 54,771
Int. Cl.[3] C07C *120/00*
U.S. Cl. 260—465.6 11 Claims

1. In a process for cyanoalkylation of a compound having a labile hydrogen atom selected from the group consisting of monohydric alcohol, polyhydric alcohol, water and phenol which comprises contacting said compound at a cyanoalkylation temperature with a cyanoalkene selected from the group consisting of acrylonitrile, alpha-methyl acylonitrile, crotononitrile, and beta-vinyl-acrylonitrile, and a cyanoalkylation catalyst in a reaction zone to form a cyanoalkylated product and by-products wherein the reaction is accompanied by undesired production of by-products with resulting reduction in selectivity for the desired cyanoalkylated product, the improvement which comprises conducting the reaction in the presence of about 1 to 9 volumes of the cyanoalkylated product in addition to that which is formed is situ by reaction of the compound and said cyanoalkene, whereby production of by-products is reduced.

4,271,090

NOVEL 2-BROMOETHYL TELLURIUM BROMIDES

Anthony N. Naglieri, Pine Brook, and Nabil Rizkalla, River Vale, both of N.J., assignors to Halcon Research and Development Corp., New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,998
Int. Cl.[3] C07C *165/00*
U.S. Cl. 260—550 7 Claims

1. Bis (2-bromoethyl) tellurium dibromide.

2. 2-Bromoethyl tellurium tribromide.

3. A process for preparing a 2-bromoethyl tellurium bromide selected from the group consisting of bis (2-bromoethyl) tellurium tribromide, 2-bromoethyl tellurium tribromide and mixtures thereof which comprises contacting ethylene with a source of tellurium tetrabromide in liquid medium in the presence of a polar organic solvent for the reaction which is inert under the conditions of the reaction, at a temperature of less than about 125° C. and in the substantial absence of molecular oxygen, to form the 2-bromoethyl tellurium bromide.

4,271,091

VAPOR PHASE CATALYTIC OXIDATION AND/OR AMMOXIDATION OF CYCLOHEXANONE AND/OR CYCLOHEXANOL TO PHENOL AND/OR ANILINE

Robert K. Grasselli, Chagrin Falls, and Dev D. Suresh, Macedonia, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Jun. 17, 1978, Ser. No. 916,649
Int. Cl.[3] C07C *85/06, 7/144, 7/12*
U.S. Cl. 564—305 19 Claims

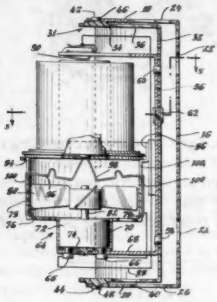
1. A process comprising contacting a cycloaliphatic ketone or alcohol in which the oxygen atom is directly connected to a ring carbon atom, or mixtures thereof, and molecular oxygen with an oxidation catalyst comprising an oxide or oxide complex containing Mo, W, Sb, V or mixtures thereof in a reaction zone, the amount of oxygen fed to said reaction zone being such that the ratio of the amount of oxygen to the amount of said ketone or alcohol is 0.1/1 to 20/1 on a molar basis.

4,271,092

APPARATUS FOR INDUCING AIR FLOW PAST A PRODUCT CAPABLE OF BEING VAPORIZED

William E. Sullivan; O. Murray Meetze, Jr., both of Columbia, S.C., and Richard H. Seager, Manchester, Conn., assignors to Risdon Enterprises, Inc., Columbia, S.C.

Continuation of Ser. No. 732,137, Oct. 13, 1976, abandoned.
This application Feb. 16, 1979, Ser. No. 12,793
Int. Cl.[3] A61L 9/04
U.S. Cl. 261—30 7 Claims



1. In a dispenser for a product capable of being vaporized including a housing having air intake openings and air discharge openings therein, a fan mounted in said housing for drawing air through said air intake openings to establish an air stream through said housing, a cartridge removably mounted in said housing and including a compartment for receiving a product capable of being vaporized therein, and duct means for directing the air stream of said fan through said compartment past said product therein and out through the air discharge openings; the improvement wherein said housing comprises:

an inner housing shell having an axis, said fan and said duct means being mounted with said inner housing shell and said cartridge being removably mounted with said inner housing shell;

an outer housing shell; and

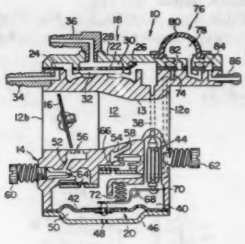
hinge means for mounting said inner housing shell within said outer housing shell for shiftable, pivoted movement substantially on said axis between a closed operating position complementary to said outer housing shell and an open servicing position nested within said outer housing shell, said outer housing shell cooperating with said inner housing shell in the closed position thereof to enclose said fan, said duct means and said cartridge, said outer housing shell cooperating with said inner housing shell in the open position thereof to render said fan, said duct means and said cartridge accessible for removal and replacement and servicing, at least one of said inner and outer housing shells being formed with said air intake openings at one end thereof and at least one of said inner and outer housing shells being formed with said air discharge openings at the axially opposed end thereof, said inner and outer housing shells thereby cooperating with said duct means to direct said air stream axially through said housing and through said compartment of said cartridge whereby said housing, said fan, said duct means and said cartridge are arranged so that the dispenser is operable in all orientations of said housing.

4,271,093

CARBURETOR

Takeshi Kobayashi, Kawasaki, Japan, assignor to Walbro Far East, Inc., Kawasaki, Japan

Filed Nov. 1, 1979, Ser. No. 90,425
Claims priority, application Japan, Nov. 20, 1978, 53-142177
Int. Cl.[3] F02M 1/16
U.S. Cl. 261—34 R 1 Claim



1. In a diaphragm carburetor having a body with a fuel supply port, a diaphragm chamber open to said fuel supply port formed in said body for supplying fuel to an internal combustion engine through main and idle fuel jets in the carburetor, a diaphragm controlled fuel inlet valve in said body connected to said fuel supply port, a pump chamber in said body, one side of which is formed by the body and the other side of which is formed by a manually compressible resilient dome sealed peripherally against said body and accessible from the outside of said body, a first passage in said body leading from the diaphragm chamber to said pump chamber having a first one-way valve opening in the direction from said diaphragm chamber to said pump chamber, a second passage in said body leading from said pump chamber to an outlet port open to atmosphere having a second one-way valve opening in the direction from said pump chamber to said outlet port,

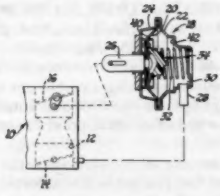
said dome being manually compressible to create a suction in said diaphragm chamber to draw a starting charge of fuel into said diaphragm chamber when said engine is not operating, said first one-way valve serving to block flow through said first passage when said carburetor is operating normally with the engine running.

4,271,094

MALLEABLE STOP FOR ENGINE CONTROL ELEMENT

L. Kirk Walters, Rochester, Mich.; Richard K. Judd, and Terrance J. Atkins, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 30, 1978, Ser. No. 938,078
Int. Cl.[3] F01B 11/02; F02M 1/00; F16F 1/36
U.S. Cl. 261—39 B 19 Claims



1. In an internal combustion engine having a choke valve controlling operation of the engine and an actuating member for moving said choke valve and a stop engageable between said actuating member and a base member to establish a stopped position for said choke valve, the improvement provided by forming said stop with a malleable portion which

plastically deforms slightly upon engagement between said members and thus gradually changes said stopped position to compensate for changes in engine operating characteristics over an extended period of engine operation.

4,271,095

IDLE ADJUSTING DEVICE FOR A CARBURETOR

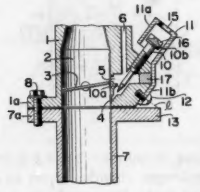
Tooru Maeda, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 20, 1979, Ser. No. 67,909

Claims priority, application Japan, Aug. 21, 1978, 53/114805[U]

Int. Cl.³ F02M 3/08

U.S. Cl. 261—41 D **11 Claims**



1. Intake means for an internal combustion engine comprising intake passage means including mounting flange means, carburetor means mounted on said mounting flange means of said intake passage means for providing a supply of intake air-fuel mixture to the intake passage means, externally adjustable idle adjust means provided in said carburetor means and having adjusting head means projecting externally from said carburetor means so that said adjusting head means can readily be actuated even when the carburetor means is mounted on the intake passage means, cover means including a first portion encircling said idle adjust means so as to prevent ready access thereto and a second portion adapted for attachment to said carburetor means, said second portion being made inaccessible by said mounting flange means on the intake passage means when the carburetor means is mounted on said intake passage means and made accessible when the carburetor means is removed from the intake passage means, said cover means being attached to the carburetor means by means of at least one screw threaded fastener which is inserted through said second portion into the carburetor means and has a longitudinal axis which is so directed that an extension thereof intersects the mounting flange means of said intake passage means when the carburetor means is mounted on said intake passage means whereby the fastener is prevented from being driven.

4,271,096

CARBURETOR

Hiroto Kobayashi, Kamakura, Japan, assignor to Walbro Far East, Inc., Kawasaki, Japan

Filed Nov. 1, 1979, Ser. No. 90,424

Claims priority, application Japan, Nov. 20, 1978, 53-142176

Int. Cl.³ F02M 9/08

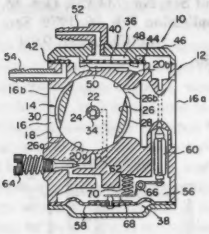
U.S. Cl. 261—44 G **2 Claims**

1. A carburetor comprising a carburetor body having an air and fuel passage open at one end to an atmosphere intake port and at the other end to an intake port of an internal combustion engine,

(a) a pair of arcuate recesses formed in the peripheral wall of said air and fuel passage in the carburetor body in opposed relation to each other,

(b) a barrel type rotary throttle valve rotatably disposed within said carburetor body supported for rotation in said opposed arcuate recesses and having a cylindrical venturi hole transverse to the axis of rotation of said valve, said venturi hole being open to the atmosphere intake port and to the engine intake port when the throttle is in open position and being essentially closed to said ports in an idle position,

(c) a fuel nozzle disposed in said venturi hole on the axis of said valve to discharge liquid fuel into the venturi hole of said barrel valve, and



(d) a shallow surface groove passage extending circumferentially around the entire circumference of the barrel valve in the area of said atmospheric and engine ports wherein air and fuel may pass through said carburetor to the engine intake port regardless of the position of said barrel valve.

4,271,097

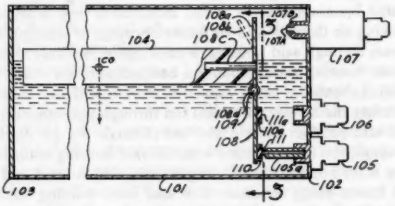
GAS AND LIQUID AD-MIXING SYSTEM

Bruce Garrard, 126 Montgomery Ferry Dr. NE., Atlanta, Ga. 30309

Filed Sep. 20, 1979, Ser. No. 77,301

Int. Cl.³ B01F 3/04

U.S. Cl. 261—64 D **13 Claims**

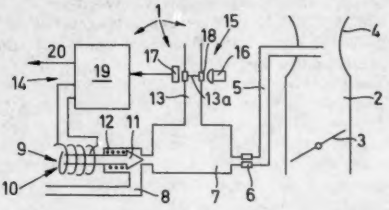


1. A continuous flow carbonator for mixing inlet carbonating gas and inlet water continously while carbonated water is being dispensed, the inlet flow rate of gas and water being equal to the outlet flow rate of water and gas mixture, said inlet water having an inherent capacity to produce an impact force of magnitude F, equal to the product of its mass flow rate and velocity, on a surface normal to its velocity, said carbonator comprising a tank, a float assembly in said tank responsive to the level of liquid in the tank and a surface on the assembly receptive to and responsive to the impact of at least a portion of said inlet water, regulator means in said tank, including an orifice and closure, for controlling the flow of said inlet gas and the static pressure in the tank responsive to a resultant force delivered to said regulator means to bias said closure against said orifice, the greater the force the greater the restriction and the less said static pressure, said force being the resultant of a weight force due to float weight less the weight of water it displaces and of an impact force due to impact of inlet water on said surface of the float assembly, and mechanical connecting means for delivering said resultant force from said float assembly to said regulator means, said impact force being diminished in its delivered amount to said regulator means to an amount less than magnitude F, and said weight force being undiminished in its delivered amount to said regulator means.

4,271,098
CARBURETOR FOR INTERNAL COMBUSTION ENGINES

Hans J. Henning, Neuss, and Heinz Holzem, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Pierburg Luftfahrtgeräte Union GmbH, Neuss, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 964,579
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756546
Int. Cl.³ F02M 17/02
U.S. Cl. 261—66 19 Claims

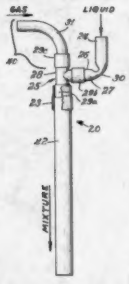


1. In a carburetor for an internal combustion engine, said carburetor comprising control means for maintaining the pressure of fuel supplied through said carburetor constant, said control means including a sensing device, a fuel feed valve and means operatively connecting said sensing device to said fuel feed valve to operate said fuel feed valve and control the rate of supply of fuel to said carburetor, the improvement wherein said sensing device includes signal producing means, instantaneous flow rate indicating means and means operatively connecting said signal producing means to both said valve and said flow rate indicating means whereby said signals operate said valve and cause said instantaneous flow rate indicating means to provide an indication of the instantaneous rate of flow of fuel through said carburetor.

4,271,099
APPARATUS FOR THOROUGH MIXTURE OF A LIQUID WITH A GAS

Thomas S. Kukla, 2616 N. Merrimac, Chicago, Ill. 60639

Filed Oct. 1, 1979, Ser. No. 80,387
Int. Cl.³ B01F 3/04
U.S. Cl. 261—76 18 Claims



1. An apparatus for intermixture of a liquid and a gas, comprising:

(a) a liquid intake conduit having an intake portion, a discharge portion and an intermediate bend portion formed such that the intake and discharge portions are substantially normal to one another, said liquid intake conduit intermediate bend portion having a restriction therein;

(b) a mixing chamber adjacent to and downstream of said discharge portion;

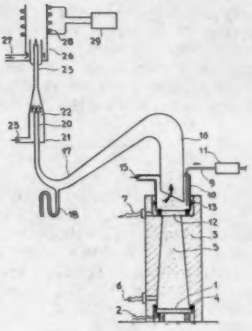
(c) a gas intake conduit connected to said discharge portion, whereby the liquid from said liquid intake conduit and the gas from said gas intake conduit are thoroughly mixed in said mixing chamber; and

(d) a gas and liquid discharge conduit attached to said mixing chamber downstream of said mixing chamber, sad gas and liquid discharge conduit having an interior cross-sectional area greater than any cross-sectional area along the mixing chamber.

4,271,100
APPARATUS FOR PRODUCING AN AEROSOL JET

Christian Trassy, Villeurbanne, France, assignor to Instruments S.A., Paris, France

Filed Jun. 17, 1980, Ser. No. 160,421
Claims priority, application France, Jun. 18, 1979, 79 15575
Int. Cl.³ B05B 1/28
U.S. Cl. 261—78 A 1 Claim



1. Apparatus for producing an aerosol jet comprising a means for atomising the substance to be transported, with the creation of a flow of carrier gas to entrain the particles formed, characterised in that downstream of the actual atomising means, the conduit for carrying the aerosol formed by the carrier gas and the particles in a state of suspension constitutes the central passage (20) of a double nozzle (21) whose annular passage (22) receives another dry gas flow thereby to form, in the conduit for carrying the whole towards the position of use, a central flow of aerosol which is externally sheathed by a flow of dry gas, the flow rates and the relative positioning of the annular and central passages of the nozzle being so determined that the flow patterns of the two flows remain laminar and at adjacent speeds, and that the axis of the nozzle (20) and the conduit (25) between the outlet of the nozzle and the position of use is vertical or only very slightly inclined.

4,271,101
PROCESS FOR THE PRODUCTION OF SPHERICAL-SHAPED FUEL ELEMENTS FOR HIGH TEMPERATURE REACTORS

Milan Hrovat, Rodenbach, and Gerhard Spener, Hanau, both of Fed. Rep. of Germany, assignors to HOBEG Hochtemperaturreaktor-Brennelement GmbH, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 855,452, Nov. 28, 1977, abandoned. This application Sep. 13, 1979, Ser. No. 75,186
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654536
Int. Cl.³ G21C 21/00
U.S. Cl. 264—0.5 6 Claims

1. A process of preparing nearly isotropic spherical fuel elements of high strength and high heavy metal content for gas cooled high temperature reactors consisting essentially of a fissile and fertile fuel material containing nucleus and a fuel free shell comprising preliminary compressing a molding pow-

der consisting essentially of (1) a mixture of natural graphite and binder resin, (2) a mixture of synthetic graphite and binder resin or (3) a mixture of both natural and synthetic graphites and binder resin together with (1) coated fissile fuel particles, (2) coated fertile fuel material particles of (3) a mixture of coated fissile fuel particles and coated fertile fuel material particles and a lubricant in a rubber mold having a cavity with the shape of an ellipsoid of revolution with elongated axis at low molding pressure three dimensionally to perform the nucleus of the fuel element, embedding the preformed nucleus in a molding powder for the shell in a second rubber mold with a cavity with the shape of an ellipsoid of revolution with elongated axis, preliminarily molding at a pressure below 200 kp/cm^2 three dimensionally to such an extent that the green graphite matrix of the so formed compact with the shape of an ellipsoid of revolution with elongated axis has a density of more than 65% of the theoretical density and subsequently final molding to form a sphere in a single dimension the preliminarily molded fuel element body in a steel die between semispherical cup shaped metal punches at a temperature within the plastic range of the binder resin at a pressure below 200 kp/cm^2 to a density of greater than 95% of the theoretical density of the green graphite matrix to form a sphere and then heat treating the sphere at a temperature up to 2000° C. sufficient to carbonize the resin and thereby form a spherical fuel element.

4,271,102

PROCESS FOR THE PRODUCTION OF CERAMIC FUEL PELLETS FOR NUCLEAR REACTORS

Milan Hrovat, Rodenbach; Hans Huschka, and Lothar Rachor, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,323

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842402

Int. Cl.^{3} G21C *21/00*

U.S. Cl. 264—0.5 **12 Claims**

1. In a process for the production of ceramic fuel pellets for nuclear reactors containing fissionable material, fertile material or a mixture of fissionable and fertile materials in the form of the oxide or carbide by heating to a temperature above 1300° C. the rough molded fuel articles compacted to 30 to 60% of theoretical density at room temperature, compacting in a die and ejection from the die the improvement comprising carrying out the heating, compacting and ejecting in a vacuum and carrying out the compacting and ejection in a combined time of 3 to 300 milliseconds.

4,271,103

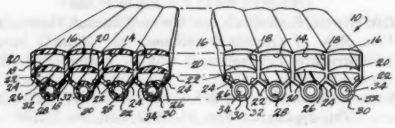
PLASTIC SOLAR PANEL STRUCTURE AND METHOD FOR MAKING THE SAME

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Filed Jan. 26, 1979, Ser. No. 6,754

Int. Cl.^{3} B29C *17/07*; B29D *23/04*

U.S. Cl. 264—1 **27 Claims**



1. A method of making a panel structure of plastic material having a uniform cross-sectional configuration throughout its longitudinal extent and a multiplicity of parallel passages extending longitudinally therethrough defined by a multiplicity of longitudinally extending integrally interconnected exterior and interior thin wall sections, each of said interior thin wall sections defining parts of two adjacent passages, each of said passages being defined at least in part by an interior thin wall section, said panel structure being operable in a radiant energy heat exchange system with certain of the exterior thin wall sections constituting the operative exterior of the panel structure and certain exterior thin wall sections being opposite thereto, said method comprising the steps of

continuously feeding plastic material at an elevated temperature sufficient to render the plastic material flowable to a die having an extrusion outlet defined by a multiplicity of interconnected slots corresponding generally in number and position to said multiplicity of thin wall sections at a pressure sufficient to cause the heated plastic material to continuously move longitudinally outwardly of said extrusion outlet so that the interconnecting slots thereof form the heated plastic material into said multiplicity of interconnected thin wall sections,

reducing the temperature of the plastic material moving longitudinally away from said extrusion outlet through the slots defining the exterior thin wall sections by exterior heat exchange while controlling the exterior configuration thereof for a time period sufficient to enable the moving exterior thin wall sections to be self-sustaining in said configuration, and

continuously feeding fluid through fluid outlets in said die between the interconnected slots of the extrusion outlet thereof so as to continuously flow longitudinally outwardly of said fluid outlets into each passage defined by the thin wall sections moving longitudinally away from said extrusion outlet while separately maintaining a relative differential fluid pressure acting within adjacent passages on opposite sides of said interior thin wall sections so as to control the position thereof relative to said exterior thin wall sections until the temperature thereof is reduced by heat exchange sufficiently to enable said moving interior thin wall sections to be self-sustaining.

4,271,104

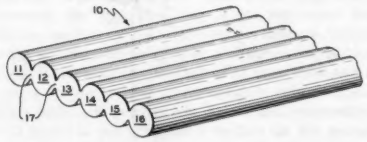
HOT ROLLING AND EXTRUSION OF OPTICAL FIBER RIBBON CABLE

Rogers H. Anderson, Bloomington; Enrique Bernal G., Minnetonka, and Di Chen, Hopkins, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1979, Ser. No. 103,247

Int. Cl.^{3} B29D *11/00*

U.S. Cl. 264—1.5 **6 Claims**



1. A method for producing a unitary ribbon like sheet of optic fiber which is effectively optically separated into a plurality of parallel optical paths, the method including the steps of:

providing a source of optically transparent material heated to a plastic consistency;

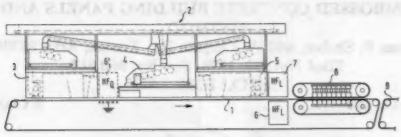
forming the optically transparent material into a ribbon like sheet; and,

causing a reducing of the index of refraction along parallel narrow strips of the ribbon like sheet to thereby effectively divide the sheet into a plurality of optical fiber paths wherein said index is reduced by the strain induced effect.

4,271,105
METHOD FOR THE MANUFACTURE OF PARTICLE BOARD

Albert de Mets, Roeselaare, Belgium, and Harry Neubauer, Springe, Fed. Rep. of Germany, assignors to Bison-Werke, Bähre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,986
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2829817
Int. Cl.³ B29H *5/26*
U.S. Cl. 264—26 **11 Claims**



1. A method for manufacturing particle board from particulate material comprising at least one binder material admixed with particles containing at least one material selected from cellulose and ligno-cellulose, the method comprising the steps of:

(a) forming a mat of said particulate material by distributing the same onto an endless transport band in a forming station, said mat comprising a bottom layer, an intermediate layer and a top layer, and being in the form of a continuous mat or a series of individual mat sections,

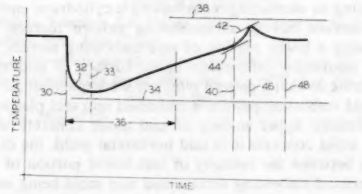
(b) selectively warming at least said bottom layer and at most said bottom and top layers by high frequency a.c. field means whereby to increase the stability of the mat during subsequent transport thereof; and

(c) transporting said mat on at least one further endless band to a prepress zone, and subsequently to a finishing press for final pressing to produce a board of compressed particles.

4,271,106
METHOD FOR CONTROLLING AN EXOTHERMIC MOLDING PROCESS

Rodney J. Groleau, Williamsburg, Mich., assignor to Control Process, Inc., Plantsville, Conn.

Division of Ser. No. 49,284, Jun. 18, 1979. This application Feb. 19, 1980, Ser. No. 122,586
Int. Cl.³ B29C *3/06*
U.S. Cl. 264—40.5 **5 Claims**



1. A method of controlling the opening of a molding machine at the end of a curing cycle comprising the steps of:

a. charging a mold with a resin that cures exothermically;

b. sensing the temperature of the resin in the mold;

c. detecting when the rate of change of the sensed temperature exceeds a first reference rate;

d. after the first reference rate has been exceeded, detecting when the rate of change of the sensed temperature falls below a second reference rate that is at least as high as the lowest to which the rate of change of temperature falls after the resin in the mold has cured; and

e. opening the mold at a time determined by the time at which the rate of change of temperature falls below the second reference rate.

4,271,107
FOAM EXTRUSION APPARATUS AND METHOD

Arthur L. Phipps, Los Osos, Calif., assignor to Condec Corporation, Old Greenwich, Conn.

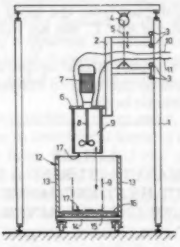
Filed Nov. 5, 1979, Ser. No. 91,116
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—51 **47 Claims**

1. In a method of extruding foam products through an inclined barometric leg with the foam product exiting a pool of water at the lower end of such leg, the step of minimizing the pressure head of water on the product as it exits the leg to reduce the density of the product.

4,271,108
METHOD AND APPARATUS FOR THE DISCONTINUOUS PRODUCTION OF A FOAMED BLOCK

Gerd Reffelmann, Overath, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jan. 2, 1980, Ser. No. 108,992
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901177
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—51 **12 Claims**



1. A method for the discontinuous production of free rise foam comprising:

(A) positioning a mold consisting of a rigid material, the interior bottom of said mold containing a flexible elastic layer on which is arranged a plastic film; beneath a vertically movable mixing unit comprising a bottomless cylindrical shell having one closed end, a stirring means and component feed lines;

(B) vertically moving said mixing unit into said mold until the open end of said cylindrical shell depresses said flexible elastic layer and becomes seated on the bottom of said mold;

(C) introducing into the volume defined by said cylindrical shell seated on the bottom of said mold a foam forming mixture by means of said component feed lines and stirring the mixture with said stirring means;

(D) vertically withdrawing said mixing unit from said mold

allowing completion of the foaming reaction within said mold, and

(E) removing the foam from said mold.

4,271,109

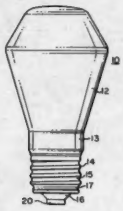
METHOD OF MANUFACTURING A CERAMIC ARTICLE

Walter A. Boyce, Glen Ridge, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 354,618, Apr. 25, 1973, abandoned, which is a division of Ser. No. 126,485, Mar. 22, 1971, Pat. No. 3,941,604. This application Aug. 16, 1977, Ser. No. 825,125

Int. Cl.³ C04B *33/26*

U.S. Cl. 264—63 **13 Claims**



1. The method of manufacturing a dense impervious ceramic article of predetermined configuration and dimensions, which method comprises:

mixing (a) from about 25% to 45% by weight of ball clay, (b) from about 10% to 25% by weight of wollastonite, (c) from about 25% to 45% by weight of a pulverized scrap glass which is selected from the group consisting of lime glass, lead glass, and soda-lime silicate glass, and (d) from 0% to about 5% by weight of bentonite to provide a finely divided raw-mix composition that consists essentially of said materials,

placing a measured quantity of said raw-mix composition in a mold and subjecting it to a pressure within a range of from about 1,000 to 7,000 pounds per square inch to form a compact,

removing said compact from the mold and heating it to a temperature above 800° C. but not exceeding about 1050° C., and

maintaining the compact at said temperature for a period of from 10 minutes to one hour to convert the compact into a hardened ceramic body.

4,271,110

METHOD OF MANUFACTURING A CERAMIC UNIT FOR INDIRECT HEAT EXCHANGE AND A HEAT EXCHANGER UNIT OBTAINED THEREBY

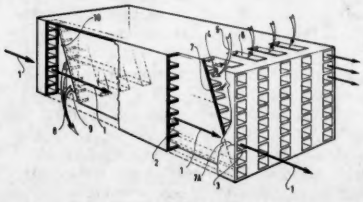
Louis Minjolle, Tarbes, France, assignor to Ceraver, Paris, France

Filed Sep. 17, 1979, Ser. No. 76,103

Claims priority, application France, Sep. 22, 1978, 78 27187

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—67 **7 Claims**



1. A method of manufacturing a ceramic unit for indirect heat exchange, said method comprising an initial step of extruding a raw ceramic material in a parallel duct configuration, the improvement comprising two inlet/outlet forming steps of:

obliquely cutting every other row of ducts whose ends are to be closed to form inlet or outlet orifices which are perpendicular to the common direction of the ducts, and

closing said rows of ducts whose ends are cut in the plane of at least one of the ends of the extruded unit, and

firing the unit, the firing step taking place later than said step of closing the ends of said rows of ducts.

4,271,111

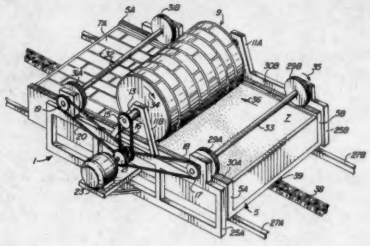
EMBOSSED CONCRETE BUILDING PANELS AND METHOD

Thomas F. Sheber, 640 W. Chapala Dr., Tucson, Ariz. 85704

Filed Nov. 13, 1978, Ser. No. 960,041

Int. Cl.³ B28B *1/08*

U.S. Cl. 264—71 **8 Claims**



1. A method for making prefabricated reinforced concrete panels, said method comprising the steps of:

a. placing rigid reinforcing material in a horizontal, portable mold so that said reinforcing material is supported above the bottom of said horizontal mold, wherein said method includes providing a plurality of tapered rib cavities in said mold for shaping reinforcing ribs in said prefabricated concrete panels, said method further comprising the step of placing nailing strips in the bottoms of said cavities before said placing of said moist concrete in said mold, said nailing strips having upwardly extending anchors therein for anchoring said nailing strips into said respective ribs of said prefabricated concrete wall panels;

b. pouring moist concrete in said horizontal mold, said moist concrete being sufficiently moist to flow around and completely surround said reinforcing material;

c. curing said moist concrete until an upper surface of said moist concrete becomes plastically deformable;

d. rotating an embossing roller having a cylindrical embossing surface having an embossing pattern thereon and pressing a lower portion of said embossing surface into said plastically deformable upper surface of said moist concrete so that a pattern which is a complement pattern of said embossing pattern is embossed into said plastically deformable upper surface of said moist concrete while said moist concrete is in said horizontal mold, the difference between the velocity of said lower portion of said cylindrical embossing surface and said mold being essentially zero to avoid smearing of said plastically deformable upper surface of said moist concrete, wherein said cylindrical embossing surface is provided by wrapping a plastic sheet having said embossing surface thereon around said embossing roller;

e. curing said moist concrete in each of said horizontal molds for a predetermined amount of time, whereby said moist concrete hardens to form said prefabricated concrete panels; and

f. separating said prefabricated concrete panels from said molds.

4,271,112

PROCESS FOR THE MANUFACTURE OF ROTATIONALLY-SYMMETRICAL COMPONENTS FROM SHORT-FIBERED MOLDING MATERIAL

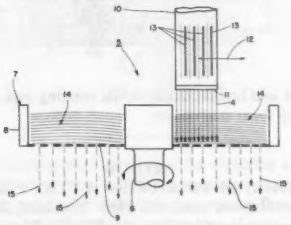
Axel Rossman, Karlsfeld, and Herbert Zech, Neubiberg, both of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,539

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827829

Int. Cl.[3] D04H 1/74; B29J 1/02

U.S. Cl. 264—86 7 Claims



1. In a process for the manufacture of predominantly rotationally-symmetrical components of high strength from short fibers which are suspended in a liquid, the improvement comprising:

(a) forming said liquid from solvents,

(b) producing a preform by feeding the suspended fiber material through a flat nozzle moving radially outwardly into a rotating rotationally-symmetrical container having a sieve wall, the inner shape of said container being similar to the final component shape but larger by the amount of volume reduction occurring during subsequent pressing,

(c) producing a crosswise pattern of fibers by alternately moving the nozzle radially outwardly and inwardly including the step of producing layers of fiber with each layer having a desired fiber alignment with a desired fiber flow direction by selectively radially moving the nozzle relative to the rotating container such that the composite movements of the nozzle and the rotating container result in a desired fiber flow alignment in a fiber layer,

(d) thereafter impregnating the preform with a resin-hardener matrix,

(e) and pressing the preform into a final shape in a die while effecting simultaneous hardening thereof.

4,271,113

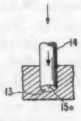
PROCESS FOR FORMING A PASSAGEWAY IN AN OSMOTIC DEVICE

Joseph G. Luschen, Los Gatos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 896,801, Apr. 17, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 61,767

Int. Cl.[3] D04H 1/20

U.S. Cl. 264—112 15 Claims



1. A process for forming an osmotic delivery device comprising:

(a) compressing a drug formulation into a solid mass;

(b) forming an indentation having predetermined dimensions in the solid mass; and

(c) thereafter coating the solid mass with a wall forming material which in final form is an osmotic membrane which covers the solid mass and is permeable to aqueous and biological fluids and substantially impermeable to the drug formulation, whereby the predetermined dimensions of the indentation are selected such that a passageway is formed from the solid mass through the formed wall to the exterior of the osmotic delivery service.

4,271,114

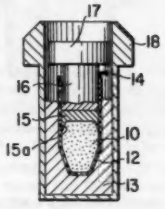
METHOD OF COMPACTING DRY POWDER INTO SHAPES

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Continuation-in-part of Ser. No. 815,873, Jul. 14, 1977, which is a continuation of Ser. No. 713,569, Aug. 11, 1976, abandoned, which is a continuation of Ser. No. 337,581, Mar. 2, 1973, abandoned. This application Mar. 17, 1980, Ser. No. 131,113

Int. Cl.[3] B22F 3/06

U.S. Cl. 264—114 7 Claims



1. A method of making shaped articles from sinterable powder which comprises:

(a) introducing said powder into a cup mold composed of destructible organic polymeric material selected from the group consisting of nylon, cellulose acetate, poly(methyl methacrylate), polypropylene or polyethylene, with an inner surface configuration corresponding to the outer surface configuration desired in the shaped article, said cup mold being supported by a metal mold support,

(b) positioning a metal plunger, having a shank contoured to have a snug fit in said cup mold so as to make contact with the powder,

(c) subjecting the powder, the cup mold, the mold support, and the plunger to centrifugal force to compress the powder against the inner wall of said cup mold,

(d) removing said polymeric mold with shaped compressed powder from said metal mold support,

(e) heating said mold and compressed powder to vaporize said mold, and

(f) further heating to sinter said shaped compressed powder.

4,271,115

METHOD OF PRODUCING A PRE-WET, DUST-FREE FORM OF ASBESTOS SHORT FIBERS

Phillip C. Georgeau, Kalamazoo, Mich., assignor to Megaloid Chemical Corporation, Kalamazoo, Mich.

Filed Aug. 9, 1979, Ser. No. 65,321

Int. Cl.[3] B01J 2/12

U.S. Cl. 264—117 9 Claims

1. A method of producing pre-wet, dust-free, agglomerated short fiber asbestos granules comprising:

admixing from about 60 percent to about 90 percent by weight asbestos short fibers and from about 10 percent to about 40 percent by weight agglomerating liquid, said agglomerating liquid comprising a wetting solvent and a binder, said wetting solvent being generally volatile at the anticipated storage temperature for said granules and said

binder being generally involatile at the anticipated storage temperature for said granules;

continuing mixing the admixture to circulate the composition and roll the wetted fibers upon themselves until granules are formed; and

thereafter allowing the granules to rest from about 24 to about 72 hours to yield stable, non-friable granules.

4,271,116

COMPOSITE STRUCTURE

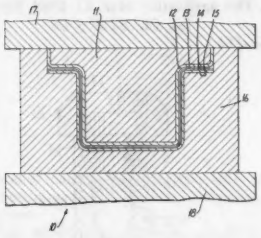
William R. Jones, Heage, England, assignor to Rolls-Royce Limited, London, England

Filed Jan. 24, 1980, Ser. No. 114,961

Claims priority, application United Kingdom, Feb. 20, 1979, 05927/79

Int. Cl.³ B29C *1/02*

U.S. Cl. 264—221 **15 Claims**



1. A method of manufacturing a composite fiber reinforced resin structure comprising the steps of:

(a) making a solid former from a low melting point material;

(b) coating said former with at least one layer of a substantially impervious elastic material;

(c) applying at least one layer of fiber upon said elastic layer to form a fiber-reinforced resin material assembly, said fiber being provided with resin thereon;

(d) placing the assembly within a heatable mold;

(e) increasing the temperature of the mold and the assembly such that the former melts and expands to consolidate the fiber reinforced material against the mold walls;

(f) maintaining said temperature of the mold and assembly to at least pre-cure the resin, and

(g) removing the composite fiber reinforced resin structure from the mold.

4,271,117

ROTATIONAL MOLDING OF CYLINDRICAL OBJECTS HAVING SWIRLED TEXTURED OUTER SURFACES

Fred K. Lyon, 4507 New Hope Ave., Pascagoula, Miss. 39567, and Ralph E. Lyon, Rte. 3, Box 463, Laurel, Miss. 39440

Filed Aug. 15, 1978, Ser. No. 933,839

Int. Cl.³ B29C *5/04*

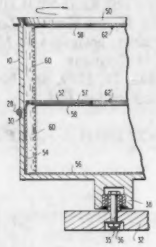
U.S. Cl. 264—275 **13 Claims**

1. A method for molding a cylindrical object having an outer surface which exhibits a swirling texture comprising:

providing a cylindrical container having a base and means for rotating said container about its axis;

injecting a liquid into said container onto the base while rotating said container at a velocity sufficient to coat the inner surface of the walls of said container surrounding the axis of rotation with said liquid by centrifugal force;

providing molten material to be molded having a specific gravity less than said liquid and injecting a predetermined quantity of said molten material into said container while rotating said container at said velocity so that the centrifugal force of said rotating container will cause said material to climb the inner surface of the liquid coating and cover said surface; permitting said material to cool and solidify



against said liquid coating while rotating said container to thereby form said object.

4,271,118

METHOD OF PRODUCING A CLAY PIGEON

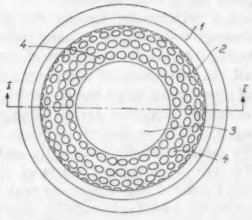
Ib Schreiner-Hansen, Aaso, DK-5953 Tranekaer, Denmark

Continuation-in-part of Ser. No. 882,389, Mar. 1, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 72,336

Claims priority, application Denmark, Jan. 3, 1978, 19/78

Int. Cl.³ C04B *11/14*

U.S. Cl. 264—333 **13 Claims**



1. A method of producing a clay pigeon which comprises: subjecting a mixture comprising plaster ($CaSO_4.\frac{1}{2}H_2O$), an amount of water constituting at least 100% by weight excess in relation to the amount necessary for setting the plaster, calcium carbonate and one or more additives selected from the group consisting of surfactants, organic binders, release agents, set-controlling agents, and brittleness-promoting agents to compression in a clay pigeon mould heated to a temperature in the range of 100° to 160° C. such that at least part of the excess amount of water in relation to the amount necessary for setting the plaster is driven off from the mould; and subsequently removing the clay pigeon from the mould.

4,271,119

CAPILLARY TRANSPORT DEVICE HAVING CONNECTED TRANSPORT ZONES

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 59,816, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 954,689, Oct. 25, 1978. This application Apr. 23, 1980, Ser. No. 142,942

Int. Cl.³ G01N *1/00, 27/46, 31/22*

U.S. Cl. 422—50 **10 Claims**

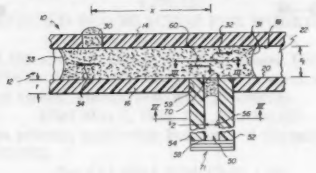
1. In a liquid transport device comprising

(a) a first pair of opposing surfaces spaced apart a distance effective to induce capillary flow of introduced liquid and to create a first zone of intended capillary liquid transport between said surfaces, and

(b) liquid access means permitting introduction of liquid into

said first zone, whereby introduced liquid flows downstream from said access means by capillary attraction;

the improvement comprising at least a second pair of opposing surfaces spaced apart a distance effective to induce capillary flow of introduced liquid and to provide a second zone of intended capillary liquid transport, said second pair of surfaces extending from only one of said first pair of surfaces, and



diverting means in said one surface for directing a portion of the liquid away from said first zone into said second zone while the remainder of the liquid continues flowing in said first zone, said diverting means being

(i) located downstream from said access means at a predetermined location and

(ii) configured to insure complete wetting of said second pair of surfaces downstream from said one surface by the liquid moving therepast, and to provide a cross-sectional flow-through area greater than about 0.2 mm^2.

4,271,120

CORROSIVE FLUID DETECTOR

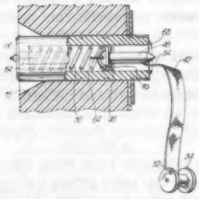
Louis M. Michaud, Port Elgin, Canada, assignor to Nova Scotia Research Foundation Corporation, Nova Scotia, Canada

Filed Jan. 7, 1980, Ser. No. 109,930

Claims priority, application Canada, Jan. 11, 1979, 319452

Int. Cl.³ G01N *17/00*

U.S. Cl. 422—53 **17 Claims**



1. A device for detecting and indicating the presence of a corrosive fluid in a volume substantially at atmospheric pressure, comprising:

a hollow housing having open inner and outer ends;

primary indicating means movably mounted in said housing between a stored position in said housing and an indicating position outside of said housing;

compression spring means, in said housing adjacent and coupled to said primary indicating means, for projecting said primary indicating means from said housing to said indicating position; and

corrodable link means for holding said spring means in compression and said primary indicating means in said stored position;

whereby, when said link means is severed through corrosion thereof, said spring means forcibly projects said primary indicating means to said indicating position outside of said housing.

4,271,121

PLAQUE FOR MEASURING THE DOSE OF REACTIVE GASES

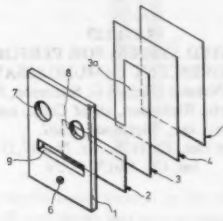
Werner Diller, Leverkusen; Eckard Drope, Cologne; Günther Ellendt, and Ernst Reichold, both of Krefeld all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,376

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2841991

Int. Cl.³ G01N *1/48, 21/06*

U.S. Cl. 422—56 **2 Claims**



1. A plaque for the rapid recognition of a dose of reactive gases comprising: a front wall having at least three windows therein; a rear wall having the same outer configuration as the front wall; an impregnated indicator strip between the front wall and the rear wall configured to overlie all of the windows and capable of undergoing a color change upon exposure to a gas; and superposed membrane layers disposed between the front wall and the indicator strip and configured such that the indicator strip is directly exposed to the atmosphere at a first window, is masked with a single membrane layer at a second window and is masked with two superimposed membrane layers at the third window to produce fields of stepwise graded sensitivity on the indicator strip whereby a rapid correlation to given ranges of doses can be achieved by a combined visual examination of the individual indicator fields.

4,271,122

CONTROL PLASMA

Rudolf Strässle, Riehen, and Hans Zaugg, Frenkendorf, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 19, 1979, Ser. No. 31,657

Claims priority, application Switzerland, Apr. 27, 1978, 4582/78

Int. Cl.³ C09K *3/00*; G01N *33/48*

U.S. Cl. 422—61 **15 Claims**

1. A process for the preparation of a control plasma for monitoring oral anti-coagulant therapy in humans, characterized in that mammals are treated with an anticoagulant selected from the group consisting of coumarin and coumarin derivatives until the blood plasma of said mammals is, adjusted to and stabilized at a value in the therapeutic range by means of monitoring the Quick value or thromboplastin time ratio, and, thereafter, the blood is withdrawn into an agent which prevents spontaneous blood coagulation, the plasma obtained by centrifugation, and a buffer is added to theobtained plasma to adjust the plasma to a physiological pH-value.

7. Control plasma of non-human origin having a Quick value in the range of from 10 to 35 percent for the monitoring of oral anticoagulant therapy in humans prepared by treating mammals with an anti-coagulant selected from the group consisting of coumarin and coumarin derivatives until the blood plasma of said mammals is adjusted to and stabilized at a value in the therapeutic range by means of monitoring the Quick value or thromboplastin time ratio, and, thereafter, withdrawing the blood into an agent which prevents spontaneous blood coagulation, obtaining the plasma by centrifugation, and adding a

buffer to the obtained plasma to adjust the plasma to a physiological pH-valve.

4,271,123

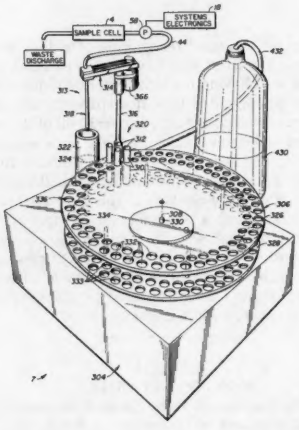
AUTOMATED SYSTEM FOR PERFORMING FLUORESCENT IMMUNOASSAYS

Robert E. Curry, Novato; Michael G. Simonsen, San Rafael, and Eric D. Schwartz, Richmond, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Oct. 22, 1979, Ser. No. 87,275

Int. Cl.³ G01N *33/54*

U.S. Cl. 422—64 **51 Claims**



1. A fluorescence immunoassay system for sequentially quantitating relatively small amounts of a clinically significant composition in a multiplicity of independent liquid samples, the samples including fluorescent particles, comprising:

transparent means defining a hollow cell for holding the sample;

a light source for generating a stable light beam directed onto the sample;

whereby the light beam causes fluorescent emissions by the particles in the sample, the intensity of the emissions being a function of the intensity of the light beam and the quantity of fluorescent particles in the sample;

means in optical communication with the transparent means for detecting photons resulting from fluorescent emissions by the particles when excited by the light beam;

whereby the number of photons detected by the photon detecting means is a function of the number of fluorescent particles in the sample;

sampler means for sequentially aspirating a liquid from a multiplicity of upwardly open vials, each vial holding one sample;

means for flowing the aspirated liquid to the cell; and

means for agitating the sample in the vial prior to aspirating the sample from the vial to ensure a uniform distribution of fluorescent particles in the aspirated liquid.

4,271,124

NON-DISPERSIVE INFRARED GAS ANALYZER FOR TESTING GASES CONTAINING WATER-VAPOR

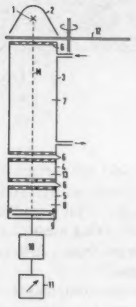
Winfried Speeter, Herxheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,432

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808033

Int. Cl.³ G01N *7/00, 27/62;* G02B *5/24*

U.S. Cl. 422—68 **8 Claims**



1. A non-dispersive infrared gas analyzer for detecting a predetermined component of a first gas mixture which is free of sulfur hexafluoride, one such component gas the gas analyzer being of the type which contains a source of infrared radiation for producing a beam of infrared radiation and a measurement cell for holdng the first gas mixture in the path of the beam of infrared radiation;

CHARACTERIZED IN THAT there are further provided

(a) a first chamber disposed in the path of the beam of infrared radiation containing a second gas containing sulfur hexafluoride, said sulfur hexafluoride having an infrared energy absorption characteristic corresponding to that of water vapor, so as to absorb energy from said beam of infrared radiation in preselected spectral energy bands; and

(b) detector means responsive to said beam of infrared radiation for producing an electric signal responsive to variations in the beam of infrared radiation.

4,271,125

INDICATOR DEVICE FOR THE QUANTITATIVE DETERMINATION OF METAL CYANIDES IN AEROSOL FORM

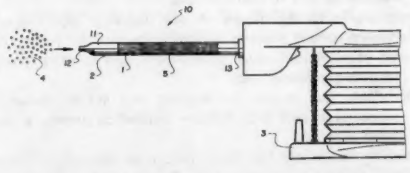
Kurt Leichnitz, Gross Grönau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,874

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854421

Int. Cl.³ G01N *31/22*

U.S. Cl. 422—86 **8 Claims**



1. An indicator device for the quantitative determination of metal cyanides in aerosol form, comprising, a tube having a

bore extending therethrough from an entrance end for receiving the metal cyanides to an exit end, gas-permeable means within said bore adjacent said entrance end, said gas-permeable means including a carrier member and an acid impregnated in said carrier member, and indicating means within said bore intermediate said gas-permeable means and said exit end, said indicator means having a carrier member impregnated with mercuric chloride and methyl red.

4,271,126

FLUIDIZED BED REACTOR FOR WORKING UP CARBON COATED PARTICLES

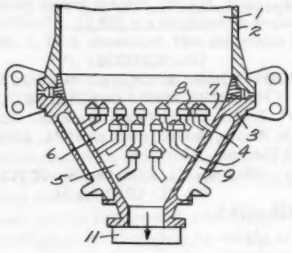
Michael Marschollek, Duren; Wolfgang Simon, Flörsheim, and Carl Walter, Hanau, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed May 9, 1978, Ser. No. 904,223

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721182

Int. Cl.[2] **B01J** *6/00;* **C10B** *1/00*

U.S. Cl. 422—143 **7 Claims**



1. A fluidized bed reactor for processing carbon coated particles, such as nuclear fuel or fertile material particles, comprising an upper cylindrical portion, a lower frustoconical portion attached to said cylindrical portion, said frustoconical portion including at least three levels of gas distributor heads on its interior with the lowermost level having at least four heads, the middle level having at least 12 heads, and the uppermost level having at least 13 heads, said frustoconical portion also having an exterior common gas distributor space with each head of each level connected to said common gas distributor space, and with said heads of each level being symmetrically located about the central axis of said frustoconical portion, said common gas distributor space having a plurality of spaced apart gas supply conduits attached thereto.

4,271,127

APPARATUS FOR THE CONTINUOUS PRECIPITATION OF URANIUM PEROXIDE

Paul Borner, 18 Goethestrasse, 6463 Freigericht 1; Hans-Jorg Isensee, 20 Raiffeisenstrasse, 6454 Bruchkobel 4, and Horst Vietzke, 19 Burgstrasse, 6457 Maintal 4, all of Fed. Rep. of Germany

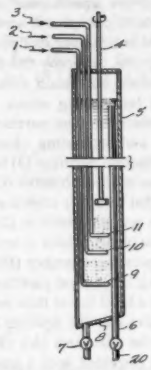
Division of Ser. No. 801,245, May 27, 1977, Pat. No. 4,152,395. This application Oct. 30, 1978, Ser. No. 955,606

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623977

Int. Cl.[3] **C09K** *3/00;* **G21C** *19/42, 21/02;* **G21F** *9/06*

U.S. Cl. 422—159 **2 Claims**

1. An apparatus for the continuous precipitation of uranium peroxide consisting essentially of a container, a stirrer therein having a rotor cage about ½ as large in diameter as the diameter of said container, a first conduit (**1**) including a first annular nozzle (**9**) in the container connected to a source of uranyl nitrate, a second conduit (**2**) including a second annular nozzle (**10**) in the container connected to a source of ammonia gas-air mixture, and a third conduit (**3**) including a third annular nozzle (**11**) in the container connected to a source of aqueous hydrogen peroxide, said second nozzle being located in the container at a distance of 80 to 120 mm above said first nozzle



and said third nozzle being located in the container at a distance of 40 to 60 mm above said second nozzle.

4,271,128

APPARATUS FOR RECOVERING ALCOHOLIC PHOSPHORIC ACID SOLUTIONS FROM ACID PHOSPHATES

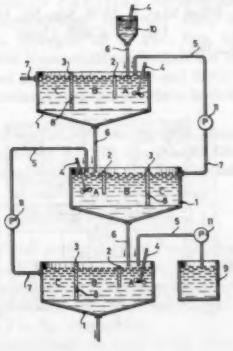
Klaus Schrödter, Cologne; Wolfgang Scheibitz, Hürth-Knapsack, and Klaus-Peter Ehlers, Erftstadt-Iechenich, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 945,501, Sep. 25, 1978, Pat. No. 4,203,956, which is a continuation of Ser. No. 765,639, Feb. 4, 1977, abandoned. This application Sep. 4, 1979, Ser. No. 72,056

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605106

Int. Cl.[3] **B01D** *11/04;* **B01F** *3/08;* **B01J** *19/24*

U.S. Cl. 422—189 **3 Claims**



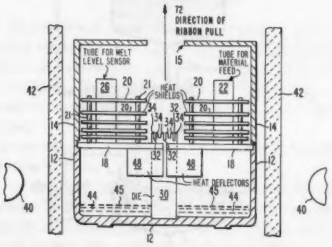
1. An apparatus for making alcoholic phosphoric acid solutions from acid phosphates or phosphate mixtures in the presence of water and a strong mineral acid by extraction with an alcohol, comprising a plurality of mixing settlers (**1**) subdivided into a mixing chamber (**A**), a separating chamber (**B**) and a settling chamber (**C**), each of the individual mixing settlers (**1**) being so subdivided by means of partitions (**2**) and (**3**) which extend vertically upwards in, and across the entire width of, the respective mixing settler (**1**); the mixing chamber (**A**) being provided with an agitator (**4**), a feed pipe (**5**) for an alcohol/-mineral acid-mixture, and a feeder (**6**) for an aqueous phosphate solution or suspension for mixing the alcohol/mineral

acid-mixture with the phosphate solution or suspension; the separating chamber (B) receiving the mixture coming from the mixture chamber (A), separating said mixture into two liquid phases comprising a lower aqueous salt phase and an upper alcoholic phase containing phosphoric acid; the settling chamber (C) being provided in its upper half portion with an outlet (7) for the alcoholic phase, whereby the three chambers (A), (B) and (C) communicate with each other through the two partitions (2) and (3) terminating above the bottom of the respective mixing settler; the first partition (2) between the mixing chamber (A) and separating chamber (B) having a lower height than the second partition (3) between the separating chamber (B) and the settling chamber (C); the first partition (2) being so arranged that its upper edge is at a level lower than the upper edge of the second partition (3) so as to permit a portion of the alcoholic phase, which is separated in the upper half portion of the separating chamber (B), to be returned to the mixing chamber (A); the second partition (3) reaching with its lower edge down to a level lower than the lower edge of the first partition (2) and also into the aqueous salt phase accumulating downstream of the chambers (A), (B) and (C); the second partition (3) being provided with a passageway (8) above the phase separation line of the two liquid phases separated from one another in the separating chamber (B); the individual mixing settlers (1) being so arranged serially one upon another that a bottom outlet for aqueous salt phase of each mixing settler (1), except that of the lowest mixing settler, simultaneously serves as the feeder (6) for the next mixing settler placed immediately downstream thereof; and the outlet (7) of each individual mixing settler, except that the uppermost mixing settler, being connected to the feed pipe (5) of the next following mixing settler.

4,271,129
HEAT RADIATION DEFLECTORS WITHIN AN EFG CRUCIBLE

Samuel Berkman, Florham Park; Robert Metzl, Hamilton Square; Richard E. Novak, E. Windsor, all of N.J., and David L. Patterson, Mountaintop, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 6, 1979, Ser. No. 18,040
Int. Cl.³ C30B *35/00*
U.S. Cl. 422—246 **7 Claims**



1. In an EFG crystal growth crucible assembly having an EFG die structure disposed at least partially within the crucible, the improvement comprising:

radiation deflecting means disposed within said crucible;

said radiation deflecting means positioned to deflect from its path in the absence of said deflecting means at least some of the radiation within the crucible in order to change the quantity of radiation impinging on at least some portion of the die in order to control the relative intensity of the radiation heating received by different portions of the die as an aid in the establishment of a desired thermal profile in the vicinity of the growth surface of the die.

4,271,130
PROCESS FOR THE PREPARATION OF ZEOLITE A FROM KAOLIN

Robert Endres, Cologne; Heinz Drave, Leverkusen; Manfred Mansmann, Leverkusen, and Lothar Puppe, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

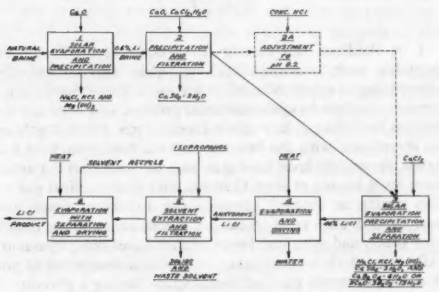
Filed Nov. 19, 1979, Ser. No. 95,750
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852674
Int. Cl.³ C01B *33/28*; C02F *1/42*; C11D *3/12*
U.S. Cl. 423—118 **6 Claims**

1. A process for the production of zeolite A from kaolin which comprises converting the kaolin into meta-kaolin at temperatures of between 700° and 950° C. in the presence of 0.1 to 10% by weight of alkaline earth compounds calculated as oxides, 0.1 to 10% by weight of an uncolored halide or halogen, and 0.1 to 10% by weight of an alkali metal compound, and reacting the meta-kaolin in an aqueous alkaline medium, wherein the conversion of the kaolin into metakaolin is carried out by flash heating at temperatures of between 600° and 1000° at a residence time of 0.01 to 5 seconds and subsequent annealing at temperatures between 700° and 950° C.

4,271,131
PRODUCTION OF HIGHLY PURE LITHIUM CHLORIDE FROM IMPURE BRINES

Patrick M. Brown, Exton; Susan R. Jacob, Royersford, and Daniel A. Boryta, Downingtown, all of Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Apr. 11, 1979, Ser. No. 28,973
Int. Cl.³ C01D *15/04*
U.S. Cl. 423—179.5 **7 Claims**



1. An integrated process for producing highly pure lithium chloride from a brine containing at least about 100 ppm lithium in the form of lithium chloride as well as sodium, potassium, magnesium, sulfate and boron as impurities which comprises subjecting said brine to a first solar evaporation in a first pond system consisting of a series of shallow ponds of relatively large surface area to obtain a first brine concentrate containing at least about 3% by weight lithium chloride and to precipitate sodium and potassium chlorides, slaked lime being added to said brine during said first evaporation to precipitate magnesium as magnesium hydroxide, adding slaked lime and calcium chloride to said first brine concentrate to convert any remaining magnesium to magnesium hydroxide, sulfate to calcium sulfate dihydrate, and boron to a calcium borate hydrate, separating precipitated calcium sulfate dihydrate from said brine, subjecting said brine to a second solar evaporation in a second pond system consisting of a series of shallow ponds of relatively large surface area to increase the concentration of lithium chloride to at least about 25% by weight, and to precipitate magnesium hydroxide, calcium sulfate dihydrate and calcium borate hydrate, evaporating additional water from said brine to increase the concentration of lithium chloride therein to at least about 40% by weight, heating said more concentrated brine at a temperature above about 101° C. to produce anhy-

drous lithium chloride, heating said lithium chloride to a temperature above about 200° C., cooling said lithium chloride to ambient temperatures, extracting said lithium chloride with isopropanol, separating the liquid phase from the solid phase, removing said isopropanol from the liquid phase, and recovering a solid lithium chloride product of high purity.

4,271,132

METHOD AND COMPOSITIONS FOR REMOVING ACID GASES FROM GASEOUS MIXTURES

Allen G. Eickmeyer, 8126 El Monte, Prairie Village, Kans. 66208

Division of Ser. No. 22,505, Mar. 25, 1970, abandoned, and a continuation-in-part of Ser. No. 432,334, Feb. 12, 1965, abandoned, which is a continuation-in-part of Ser. No. 291,532, Jun. 28, 1963, abandoned, which is a continuation-in-part of Ser. No. 231,963, Oct. 22, 1962, abandoned, which is a continuation-in-part of Ser. No. 209,221, Jul. 11, 1962, abandoned, said Ser. No. 22,505, is a continuation-in-part of Ser. No. 523,926, Feb. 1, 1966, abandoned. This application Mar. 15, 1971, Ser. No. 124,413

The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—223 **7 Claims**

1. An absorption-desorption process for removing acid gases such as CO_2 or H_2S from gaseous mixture containing such acid gases, comprising the step of:

contacting said gaseous mixture with a hot aqueous solution comprising from about 15 to 40% by weight of a potassium salt selected from the group consisting of potassium carbonate, potassium borate and mixtures thereof and a minor amount of an amine selected from the group consisting of the alkanolamines and the ethylene polyamines in an absorption stage to thereby catalyze the absorption of said acid gases from said gaseous mixture;

maintaining the aqueous solution at an elevated temperature of at least about 56° C. during contact with said gaseous mixture;

regenerating the hot aqueous solution containing said absorbed acid gas in a regeneration stage by steam stripping at least a portion of said acid gas therefrom; and

recycling at least a portion of said regenerated solution for further contact with said gaseous mixture while maintaining said solution at a temperature of at least 56° C.

4,271,133

PROCESS FOR REMOVING HYDROGEN CYANIDE FROM GASEOUS STREAMS

Cyril Tellis, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,779

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—230 **10 Claims**

7. A process for purifying a gaseous stream containing hydrogen cyanide, carbonyl sulfide, hydrogen sulfide and hydrogen chloride as impurities therein which comprises:

(a) providing an adsorbent bed wherein the adsorbent comprises zinc oxide and contains no more than 5%, by weight, of an oxide of an alkali or alkaline earth metal, and

(b) contacting said process stream with said adsorbent bed at a temperature of from about ambient to about 350° C. for a period of time sufficient to reduce the concentrations of each of said impurities to the desired value.

4,271,134

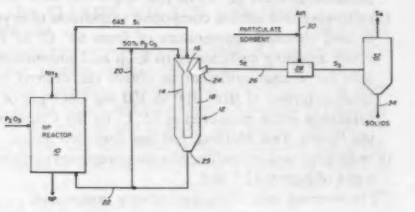
TREATMENT OF EFFLUENT GASES FROM THE MANUFACTURE OF FERTILIZER

Aaron J. Teller, Westboro, Mass., assignor to Teller Environmental Systems, Inc., Worcester, Mass.

Continuation of Ser. No. 18,485, Mar. 8, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,441

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—238 **8 Claims**



1. A process for treating ammonia containing effluent gases from a nitrogen phosphate fertilizer reactor which comprises:

washing the effluent gases with concentrated phosphoric acid containing between about 34–55 weight percent of P_2O_5 to remove ammonia;

forming a product gas containing acid gases and particulates including NH_4F and $NH_4F.HF$;

contacting subsequently the product gas with finely divided alkaline target particles of solid sorbent material to capture contaminating particulates in the acid gases;

separating the particulates and target particles from the product gas; and,

maintaining the effluent gases and the product gas during separation at a dry bulb temperature of at least about 20° F. above dew point.

4,271,135

PREPARATION OF FINELY-DIVIDED, WATER-INSOLUBLE SILICATE CATION-EXCHANGERS WITH A NARROW PARTICLE SIZE SPECTRA

Willi Wuest, Ratingen-Hoesel; Guenther Just, Hilden, and Bernd W. Peters, Solingen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen and Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Continuation of Ser. No. 926,866, Jul. 24, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,824

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734296

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **18 Claims**

1. A method for the preparation of finely-divided, water-insoluble, aluminosilicate cation-exchangers with a narrow particle size spectra suitable for detergent formulations having a grain size distribution with 96% less than 10μ and a mazimum size range of from 3 to 5μ comprising:

(1) agitating a water-dissolved alkali metal silicate at a temperature of from 60° C. to 85° C.,

(2) mixing therewith at a temperature of from 60° C. to 85° C. over a period of from three seconds to five minutes with vigorous agitation, a water-dissolved alkali metal aluminate, in the presence of an excess of alkali to give a suspension of a silicate compound containing bound water, and having the formula, bound water not shown,

$$(M_2O)_{0.8\text{-}1.3}.Al_2O_3.(SiO_2)_{1.75\text{-}2.0}$$

wherein M represents an alkali metal, wherein said reactant solutions when mixed have a composition corresponding to the desired AL_2O_3 and SiO_2 amounts of the

above formula, with a ratio of from 3.5 to 4 mols M_2O/mol Al_2O_3 and a ratio of from 75 to 80 mols of water/mol Al_2O_3,

(3) maintaining said silicate compound suspension after said mixing step is completed, for a period of from two to twenty minutes under the agitation and temperature conditions of said mixing step,

(4) rapidly heating said silicate compound suspension at least 5° C. above the temperature of said mixing step to a temperature of from 65° C. to 100° C.,

(5) allowing said silicate compound suspension to crystallize at said elevated temperature of from 65° C. to 100° C. while agitating sufficiently to keep said suspension flowable for a time sufficient to obtain the desired calcium binding power of from 100 to 200 mg CaO/gm of active substance when measured at 22° C. by the Calcium Binding Power Test Method, but less than two hours,

(6) adjusting said crystalline silicate compound suspension to a pH of below 12.5 and

(7) recovering said crystalline silicate compound.

4,271,136

PROCESS FOR THE PRODUCTION OF AMMONIA

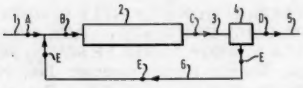
Stephen R. Tennison, Weybridge, England, assignor to The British Petroleum Company Limited, London, England

Filed Oct. 2, 1979, Ser. No. 81,131

Claims priority, application United Kingdom, Oct. 12, 1978, 40384/78

Int. Cl.[3] **C01C** *1/04*

U.S. Cl. 423—362 **11 Claims**



1. A continuous process for the production of ammonia which process includes a start-up stage and a subsequent stage, said process comprising passing a feedstock containing hydrogen and nitrogen over a catalyst during both said start-up stage and said subsequent stage, the nitrogen and hydrogen being supplied at said start-up stage so that nitrogen is in stoichiometric excess and thereafter supplying make up feedstock of nitrogen and hydrogen in stoichiometric proportions, said catalyst comprising (i) as support a graphite-containing carbon having (a) a basal plane surface area of at least 100 m^2/g, (b) a ratio of BET surface area to basal plane surface area of not more than 8:1, and (c) a ratio of basal plane surface area to edge surface area of at least 2:1, and (ii) as active component (a) 0.1 to 50% by weight of a transition metal of the 4th, 5th and 6th horizontal periods of Groups VB, VIB, VIIB and VIII of the Periodic Table, expressed as % by weight of total catalyst, and (b) 0.1 to 4 times by weight of (a) of a modifying metal ion selected from Groups IA or IIA of the Periodic Table or the lanthanides or actinides, the modifying metal ion being actively associated with the transition metal rather than the support, under conditions of temperature, pressure and space velocity such that conversion to ammonia is effected, separating unreacted hydrogen and nitrogen from product ammonia, recycling the unreacted hydrogen and nitrogen to said subsequent stage with the nitrogen in stoichiometric excess, and supplying make-up feedstock of hydrogen and nitrogen to said subsequent stage in stoichiometric proportions.

4,271,137

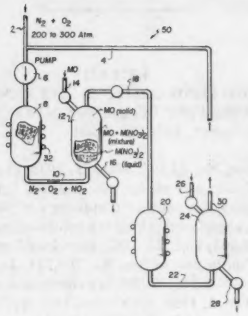
FIXATION OF NITROGEN

Paul Harteck, Troy, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,377

Int. Cl.[3] **C01B** *21/48;* **C01F** *11/38*

U.S. Cl. 423—395 **11 Claims**



1. A process for the fixation of nitrogen comprising: combining gaseous nitrogen and oxygen at a total pressure of above 100 atmospheres and at a working pressure range, with a solid metal oxide; initially heating the combination to a working temperature range sufficient to form a nitrate and below the dissociation pressure of the nitrate corresponding to the working temperature and pressure ranges; the nitrogen and oxygen reacting to form nitrogen oxides and the nitrogen oxides and solid metal oxide reacting to form the nitrate with the overall reaction being substantially isothermic; thermally insulating the reaction to maintain the working temperature range; the temperature range being near thermal equilibrium for the nitrogen and oxygen to nitrogen oxides reaction; extracting the nitrate from the reacting combination to form a product of nitrate and to leave a remaining reacting combination; and adding additional solid metal oxide nitrogen and oxygen as needed to replace that consumed to the remaining reaction combination.

4,271,138

PROCESS FOR PRODUCING ALUMINUM OXYCHLORIDE SOLUTIONS FROM LOW MOLECULAR WEIGHT ALUMINUM ALKOXIDES

Eugene F. Kennedy, and Bruce E. Leach, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Apr. 21, 1980, Ser. No. 142,494

Int. Cl.[3] **C01B** *11/00*

U.S. Cl. 423—462 **12 Claims**

1. A single phase process for producing aluminum oxychloride solution comprising

(a) adding HCl to aluminum alkoxides where the alkoxide units contain from 1 to 5 carbon atoms to form chloride-containing alkoxides, wherein from about 0.2 to about 1.0 moles of HCl per mole of aluminum alkoxide is used;

(b) hydrolyzing the reaction product of (a) to form alcohols and aluminum oxychlorides; then

(c) removing alcohols and recovering aluminum oxychloride.

4,271,139

SCINTILLATION PROXIMITY ASSAY

Hiram Hart, 3450 Wayne Ave., Bronx, N.Y. 10467

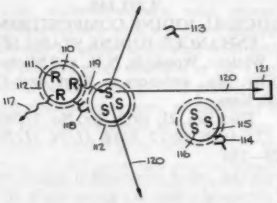
Filed Mar. 27, 1978, Ser. No. 890,325

Int. Cl.[3] **G01N** *33/48;* **A61K** *43/00;* **G01T** *1/00*

U.S. Cl. 424—1 **10 Claims**

1. In an improved non-destructive method of biological fluid assay, the improvement wherein the biological linking material

being assayed links fluid suspensions of both a plurality of tritiated-particulates and potentially scintillating-particulates within activating range one to the other, each of said linked scintillating-particulates emitting detectable light-pulses upon



activation responsive to bombardment of energy from each of said linked tritiated-particulates within said range, said light-pulses being quantitatively correlative to the concentration of said biological-linking material in said fluid.

4,271,140

METHOD AND COMPOSITION FOR DOUBLE RECEPTOR, SPECIFIC BINDING ASSAYS

James R. Bunting, Washington, D.C., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 871,478, Jan. 23, 1978, abandoned. This application Aug. 1, 1978, Ser. No. 930,130

Int. Cl.[3] **G01N** *33/48;* **G01T** *1/00;* **A61K** *43/00*

U.S. Cl. 424—1 **45 Claims**

1. In a double receptor, specific binding assay for sample ligand wherein a first receptor is bound by a second receptor, the improvement comprising substituting for said double receptor a complex of the structure:

$$A_{BL}(BL)_nA_1$$

wherein BL is a binding ligand, A_{BL} is an unlabelled receptor specific for said binding ligand, A_1 is a receptor, n is at least one, BL is covalently bound to A_1 and A_{BL} is reversibly bound to BL.

4,271,141

RADIOIMMUNOLOGICAL METHOD OF DETERMINING THE THYROID FUNCTION BY AN IN VITRO TEST IN BLOOD SERUM

Wilhelmus T. Goedemans, Schoorl, Netherlands, assignor to Byk-Mallinckrodt CIL B.V., Petten, Netherlands

Filed Dec. 11, 1978, Ser. No. 968,591

Claims priority, application Netherlands, Dec. 16, 1977, 7713952

Int. Cl.[3] **G01N** *33/48;* **G01T** *1/00;* **A01K** *43/00*

U.S. Cl. 424—1 **5 Claims**

1. In a method for determining the thyroid function by an in vitro test using blood serum, in which test

(a) a patient's blood serum sample is mixed with a solution containing radioactive thyroxine with a compound which liberates thyroxine from thyroxine-binding globulin;

(b) the resulting test mixture is thereafter buffered with a buffering agent;

(c) an antiserum is added to provide antibodies which bind a portion of the thyroxine present via a thyroxine-binding immunoreaction;

(d) unbound thyroxine is thereafter separated from the thyroxine bound to antibodies; and

(e) the relative quantities of unbound and bound thyroxine are thereafter determined by measurement of radioactivity;

the improvement which comprises adding to the test mixture after buffering an additional sample of the patient's blood serum, said additional sample being smaller in quantity than that of the patient's blood serum sample initially utilized.

4,271,142

PORTABLE LIQUID ANTACIDS

Wayne J. Puglia, Bellerose Village; Frank Witzel, Spring Valley, and Donald A. M. Mackay, Pleasantville, all of N.Y., assignors to Life Savers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 49,535, Jun. 18, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,469

Int. Cl.[3] **A61K** *9/24, 9/28, 9/42, 33/06*

U.S. Cl. 424—14 **18 Claims**

1. An antacid piece consisting essentially of a center portion and an outer portion surrounding said center portion, said center portion consisting essentially of an antacid in the form of a liquid, cream or gel, and optionally a flavorant to mask the grittiness of the antacid and enhance the textural qualities of the antacid piece, and said outer portion consisting essentially of a fat containing material comprising a chocolate which is resistant to air and moisture for protecting said center portion and masking the grittiness of the antacid.

4,271,143

SUSTAINED RELEASE OPHTHALMIC DRUG DOSAGE

Ronald D. Schoenwald, and Robert E. Roehrs, both of Fort Worth, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 872,074, Jan. 25, 1978, abandoned. This application May 9, 1979, Ser. No. 37,314

Int. Cl.[3] **A61K** *31/74, 31/78, 31/71, 31/35*

U.S. Cl. 424—78 **29 Claims**

1. An ophthalmic dosage of an aqueous gel for application to the conjunctival sac of the eye, said gel comprising an ophthalmic drug and a gel-forming high molecular weight carboxy vinyl polymer, said polymer having a molecular weight in excess of 1,000,000, said ophthalmic drug being present at a level of from about 0.03 to about 15 percent by weight, said polymer being present at a level of from about 2 to about 8 percent by weight, said gel having a viscosity of from about 40,000 to about 300,000 cps and a yield value of from about 5,000 to about 20,000 dyne/cm^2.

4,271,144

DEXTRAN COMPOSITION FOR CONTROLLING CORNEAL HYDRATION

Frank J. Holly, Lubbock, Tex., assignor to Holles Laboratories, Inc., Cohasset, Mass.

Filed Jun. 6, 1979, Ser. No. 46,188

Int. Cl.[3] **A61K** *31/74, 31/70, 31/245, 31/155*

U.S. Cl. 424—78 **9 Claims**

1. An ophthalmic solution for corneal dehydration in a human or animal eye comprising an aqueous solution of hydrophilic nonviscous dextran with an average molecular weight of between about 40,000 and about 150,000 said polymer being present at a colloidal osmolality between about 40 and about 200 torr.

4,271,145

PROCESS FOR PRODUCING ANTIBODIES TO HEPATITIS VIRUS AND CELL LINES THEREFOR

Jack R. Wands, Waban, Mass., and Vincent R. Zurawski, Jr., West Chester, Pa., assignors to The Massachusetts General Hospital, Boston, Mass.

Filed Oct. 22, 1979, Ser. No. 86,947

Int. Cl.[3] **A61K** *39/00, 39/42;* **C12N** *1/26*

U.S. Cl. 424—85 **13 Claims**

1. A process for preparing an antibody to a human viral hepatitis antigen which comprises intraperitoneally administering to an animal a first dosage of a hepatitis antigen in an amount of between approximately 1 and 50 μg/animal, intraveneously administering a second dosage of the hepatitis anti-

gen to said animal at least about 3 weeks after administering said first dosage, recovering lymphocyte cells producing antibody from said animal, forming cell hybrids by fusing said lymphocyte cells to a myeloma cell, culturing said hybrids and collecting said antibody as a product of said hybrids.

9. A compositon comprising a hybrid continuous cell line that produces antibody to a viral hepatitis antigen which comprises a cell hybrid of a BALB/c mouse spleen cell immunized with viral hepatitis antigen fused to a mouse myeloma and a culture medium for said hybrid.

4,271,146

METHODS OF USING CHLAMYDIA VACCINE FOR PREVENTING AND TREATING BOVINE AND OVINE DISEASES

Albert C. Seawell, 1047 Carol Ave., Ripon, Wis. 54971

Continuation-in-part of Ser. No. 73,004, Sep. 6, 1979. This application Jun. 30, 1980, Ser. No. 163,985

Int. Cl.[3] A61K *39/118*

U.S. Cl. 424—89 **16 Claims**

1. A method of immunizing and treating ovines against *Chlamydia Psittaci* which comprises parenterally administering modified live Chlamydia Feline Pneumonitis Vaccine to the ovines to stimulate the production of antibodies therein.

4,271,147

PROCESS FOR THE ISOLATION OF MEMBRANE PROTEINS FROM *NEISSERIA MENINGITIDIS* AND VACCINES CONTAINING SAME

Torsten B. Helting, Perchtoldsdorf, Austria, and Gerhard Guthöhrlein, Marburg an der Lahn, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Jan. 10, 1980, Ser. No. 110,945

Int. Cl.[3] A61K *39/095;* **C07C** *103/52*

U.S. Cl. 424—92 **7 Claims**

1. A method for isolating membrane proteins from *Neisseria meningitidis,* which method comprises extracting *Neisseria meningitidis* organisms at least once for 15 minutes to 24 hours with an aqueous solution containing a detergent in a concentration from 0.1 to 2 percent weight/volume and then separating and recovering the supernatant extract which now contains said membrane proteins.

7. A vaccine against meningitis cerebrospinalis epidemica, said vaccine comprising an immunologically effective amount of membrane proteins isolated by the method of claim **1**.

4,271,148

PROCESS FOR PREPARING LIVER FOR USE AS THERAPEUTIC AGENT

Walter W. Keeling, Roanoke & Market Sts., Amsterdam, Va. 24175

Continuation-in-part of Ser. No. 956,395, Oct. 31, 1978, abandoned. This application Sep. 25, 1979, Ser. No. 78,890

Int. Cl.[3] A61K *35/407, 35/413*

U.S. Cl. 424—106 **6 Claims**

1. A process for producing a highly palatable liver product having a substantially reduced bulk, but without the loss of any of its essential ingredients and which, in such form, is effective for use in providing a source of said ingredients, said process comprising the steps of soft cooking the liver in a pressure vessel at a temperature between about 212° to 235° F. at about 15 pounds per square inch to 18 pounds per square inch for a period of about 15 minutes; chilling said vessel and liver to a temperature of about 0° F.; evacuating said vessel to about 18 inches of mercury and maintaining this vacuum for about 30 minutes; grinding the resulting liver into finely divided rice size granules; subjecting said rice size granules to a further vacuum treatment of about 20 inches of mercury and for a period of time of about 30 minutes; further reducing the size of said rice size granules by grinding same to finely divided particulates approximating that of granulated sugar crystals, said crystals having a length of between about 1 to 5 millimeters; subjecting said finely divided liver particulates to a high vacuum on the order of about 20 inches of mercury and for a period of about 30 minutes; and recovering the resulting product.

4,271,149

GERMICIDAL IODINE COMPOSITIONS WITH ENHANCED IODINE STABILITY

Murray W. Winicov, Woodside, N.Y., and Michael Oberlander, Kansas City, Mo., assignors to West Agro-Chemical, Inc., Westwood, Kans.

Filed Sep. 21, 1979, Ser. No. 77,787

Int. Cl.[3] A01N *59/12;* **A61K** *31/74, 31/79, 33/18*

U.S. Cl. 424—150 **10 Claims**

1. A germicidal iodine composition comprising an aqueous solution of elemental iodine in a germicidally effective amount not exceeding about 1.0% and at least one organic substance which slowly reacts with iodine selected from the group consisting of iodine complexing polymers, surface active agents, alcohols, polyols and water soluble solvents, said organic substance constituting 1 to 50% by weight of said composition, wherein iodine loss during extended storage due to such reaction is controlled by providing in said composition balanced sources of iodide ion in the range of about 0.025% to 0.5% and iodate ion in the range of about 0.005% to 0.2% while maintaining a pH within the range of pH 5–7.

4,271,150

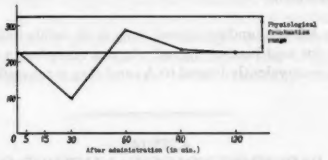
UROKINASE PREPARATION FOR ORAL ADMINISTRATION

Koji Sasaki, Omiya, and Yasukazu Harada, Tokyo, both of Japan, assignors to Zeria-Shinyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,239

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 **2 Claims**



1. A method for treating thrombosis which comprises orally administering to a patient in need of such treatment an effective amount of urokinase in admixture with an effective urokinase stabilizing amount of a glycoprotein selected from the group consisting of mucins and mucoids which amount is effective in stabilizing urokinase against deactivation and in enhancing urokinase absorption from the gastrointestinal tract and a pharmaceutical carrier.

4,271,151

PROTEIN-BOUND POLYSACCHARIDES

Tetsuya Hotta, Tokyo; Satoru Enomoto, Fujisawa; Chikao Yoshikumi, Kunitachi; Minoru Ohara, Tokyo, and Saburo Ueno, Ichigayadai, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 40,105, May 18, 1979, which is a continuation-in-part of Ser. No. 755,142, Dec. 29, 1976, abandoned. This application Feb. 13, 1980, Ser. No. 121,142

Claims priority, application Japan, Jan. 1, 1976, 51-318

Int. Cl.[3] A23J *1/00;* **A61K** *31/71, 31/73, 37/02*

U.S. Cl. 424—177 **12 Claims**

1. An antitumor agent suitable for oral administration to a mammal having cancer, said antitumor agent being capable of retarding the growth of said cancer, which comprises an effec-

tive amount of a protein-bound polysaccharide obtained by extraction of a mycelium or fruit body of a Coriolus of Polyporaceae of Basidiomycetes and having a molecular weight within the range of 5,000 to 300,000 as measured with ultracentrifugation and which gives a positive color reactions characteristic of saccharides with α-naphthol-sulfuric acid, indolesulfuric acid, anthrone-sulfuric acid, phenol-sulfuric acid, and tryptophane-sulfuric acid, a positive ninhydrin color reaction characteristic of amino acids after hydrochloric acid hydrolysis and a positive color reaction in the Lowry-Folin test characteristic of peptide linkage, said protein-bound polysaccharide having absorption regions, as measured by proton nuclear magnetic resonance spectra, at 0.9±0.1 ppm, 1.2±0.1 ppm, 2.0±0.1 ppm, 4.5±0.1 ppm and 4.7±0.1 ppm, with broad absorption at 3.0–4.4 ppm, said protein-bound polysaccharide having a polysaccharide portion/protein portion ratio within the range of 55/45 to 95/5 provided that the proton strength of the protein portion is at 0.5–2.5 ppm and that of the polysaccharide portion is at 2.5–6.0 ppm, and said polysaccharide portion being composed of β-glucan, showing no absorption attributed to α-glucan at 4.9–6.0 ppm, said protein portion being composed of aspartic acid, threonine, serine, glutamic acid, proline, glycine, alanine, cysteine, valine, methionine, isoleucine, leucine, tyrosine, tryptophane, phenylalanine, lysine, histidine and arginine, said polysaccharide being present in an amount sufficient to retard the growth of cancer.

4,271,152

PSYCHO-PHARMACOLOGICAL PEPTIDES

David de Wied, Biethoven, and Hendrik M. Greven, Heesch, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Feb. 20, 1980, Ser. No. 123,060

Claims priority, application Netherlands, Feb. 21, 1979, 7901348

Int. Cl.[3] **A61K** *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **10 Claims**

1. Peptide of the formula:

A-R-L-Ser-R_1-L-Thr-L-Pro-L-Leu-L-Val-L-Thr-B

wherein

R represents the amino acid residue L-Lys or L-Arg,

R_1 represents the amino acid residue L-Glu or L-Gln,

B represents one of the following amino acid or peptide-radicals:

L-Leu-OH, (α-dehydro) Leu-OH

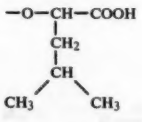
D-Leu-OH

L-Leu-L-Phe-OH

L-Leu-L-Phe-L-Lys-OH

L-MeLeu-OH

or the radical



and A represents one of the following radicals or residues:

hydrogen

H-L-Glu

Z_1-L-Glu

Z_2-L-Ser-L-Glu-

H-Q_1-L-Thr-L-Ser-L-Glu-

Q_2-L-Thr-L-Ser-L-Glu-

Z_3-Q_1-L-Thr-L-Ser-L-Glu- or

H_2N-ALK-CO-L-Phe-Q_1-L-Ser-L-Glu-

in which

Z_1 represents H-L-Ser, H-D-Ser, desamino-Ser, 2,3-dihydroxy propanoyl or H_2N-ALK-CO-,

Z_2 represents H-L-Thr, H-D-Thr, desamino-Thr, 2,3-dihydroxybutanoyl or H_2N-ALK-CO;

Q_1 represents L-Met, L-Met (O), L-Met (O_2) or L-Leu

Q_2 represents H-D-Met, H-D-Met (O), H-D-Leu, H-D-Met (O_2), desamino MET, desamino Met (O), desamino Met (O_2), desamino Leu, 2-hydroxy-4-methylthiobutanoyl, 2-hydroxy-4-methylpentanoyl or the radical H_2N-ALK-CO,

Z_3 represents H-L-Phe, H-D-Phe, desamino Phe, 2-hydroxy-3-phenyl-propanoyl and H_2N-ALK-CO-,

and ALK represents an alkylene or alkylidene group with 1–6 carbon atoms,

as well as derivative thereof selected from acid addition salts, metal salts, aliphatic esters having from 1 to 18 carbon atoms in the alkanol moiety, unsubstituted amides, mono- or di-alkyl substituted amides, wherein the alkyl group contains from 1 to 6 carbon atoms, N-acyl derivatives wherein the acyl group contains from 1 to 6 carbons atoms, N-alkyl or N,N-dialkyl derivatives wherein the alkyl group has from 1 to 6 carbon atoms, and metal complexes.

4,271,153

NOVEL MONOPHOSPHATES

Kailash K. Gauri, Lentföhrden, Fed. Rep. of Germany, assignor to Robugen GmbH Pharmazeutische Fabrik, Esslingen-Zell, Fed. Rep. of Germany

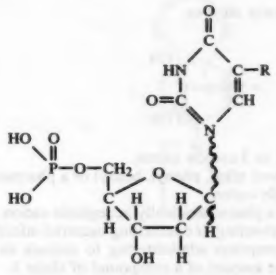
Filed Apr. 17, 1979, Ser. No. 30,852

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841898

Int. Cl.[3] **A61K** *31/70;* **C07H** *19/10*

U.S. Cl. 424—180 **12 Claims**

1. A compound of the formula



wherein R is lower alkyl of 2 to 6 carbon atoms.

9. A method of preventing or treating herpes viral infections in warm-blooded animals comprising administering to warm-blooded animals an herpes antivirally effective amount of at least one compound of claim 1.

4,271,154

OINTMENT FOR TREATMENT OF ARTHRITIS

Levie Richards, R.D. 2, Box 126, Whitehouse Station, N.J. 08889

Filed Sep. 11, 1978, Ser. No. 940,988

Int. Cl.[3] **A61K** *35/78*

U.S. Cl. 424—195 **7 Claims**

1. A method for producing a composition of reacted ingredients, comprising in combination: admixing petroleum jelly with red pepper sufficiently and for an interval of time sufficient to obtain a first composition characterized by infra-red analysis indicative of infra-red absorption at 3200 CM-1 and a sharp band at 1647 CM-1 and a new band at 1027 CM-1, and thereafter admixing therewith a lead-free gasoline with said first composition sufficiently to obtain a semi-solid ointment characterized by infra-red analysis indicative of new bands at 1072 and 1034 CM-1 not present in individual components and

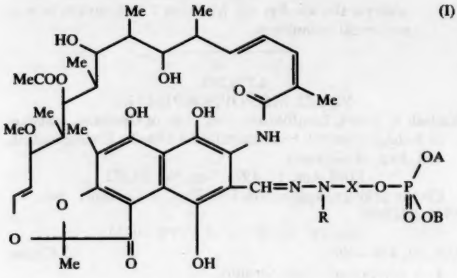
more intense than bands in red pepper analysis, and further indicative of hydroxyl absorption at 3289 CM-1 and a carbonyl absorption band at 1715 CM-1.

4,271,155
WATER SOLUBLE HYDRAZONES OF 3-FORMYLRIFAMYCIN SV, ANTIBACTERIAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

Renato Cricchio, Varese, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

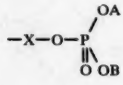
Filed Jun. 19, 1980, Ser. No. 160,799
Claims priority, application United Kingdom, Jun. 28, 1979, 22461/79
Int. Cl.[3] **C07D** *491/06;* **A61K** *31/395*
U.S. Cl. 424—200 **6 Claims**

1. A rifamycin compound of the formula



(I)

wherein
R is hydrogen, lower alkyl or



X is alkylene of 1 to 5 carbon atoms;
A is hydrogen, lower alkyl, phenyl, benzyl or a pharmaceutically acceptable cation;
B is hydrogen or a pharmaceutically acceptable cation.

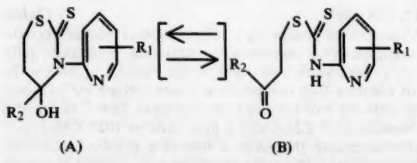
5. A method of preventing or combatting bacterial infections in animals which comprises administering to animals an antibacterially effective amount of a compound of claim **1**.

4,271,156
PERHYDRO-1,3-THIAZINE DERIVATIVES

Jean-Dominique Bourzat, Paris; Daniel Farge, Thiais; Andre Leger, Paris, and Gerard Ponsinet, Sucy-en-Brie, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 14, 1979, Ser. No. 94,335
Claims priority, application France, Nov. 16, 1978, 78 32387
Int. Cl.[3] **A61K** *31/44;* **C07D** *213/71, 409/04*
U.S. Cl. 424—246 **25 Claims**

1. A compound of the general formula:



(I)

(A) (B)

wherein R_1 represents hydrogen or halogen in the 4-, 5- or 6-position of the pyridyl radical and R_2 represents hydrogen, straight- or branched-chain alkyl of 1 to 4 carbon atoms or phenyl.

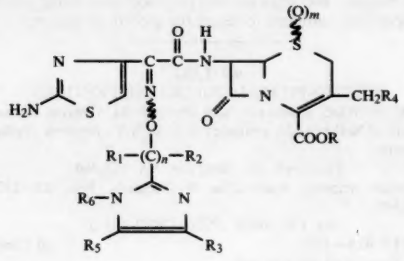
25. A method of treating or preventing a helminth or filarial infection which comprises administering to a mammal suffering from or subject to a said infection an effective amount of a compound as claimed in claim **1**.

4,271,157
IMIDAZOLE DERIVATIVES OF 7-[(2-AMINO-4-THIAZOLYL)-OXIMINO] CEPHALOSPORINS

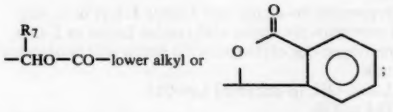
Theodor Denzel, Regensburg, and Hermann Breuer, Schoenhofen, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 28, 1980, Ser. No. 125,801
Int. Cl.[3] **A61K** *31/545;* **C07D** *501/56*
U.S. Cl. 424—246 **12 Claims**

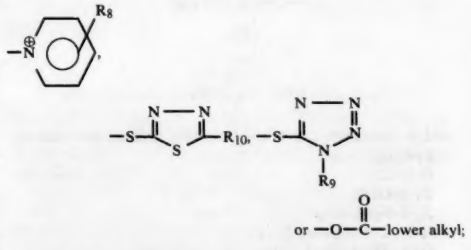
1. A compound of the formula



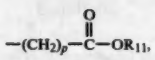
wherein
R is hydrogen, alkali metal,

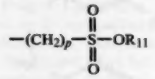


R_1 is hydrogen or methyl;
R_2 is hydrogen or methyl;
R_3 is hydrogen or methyl;
R_4 is hydrogen, —$OCONH_2$,



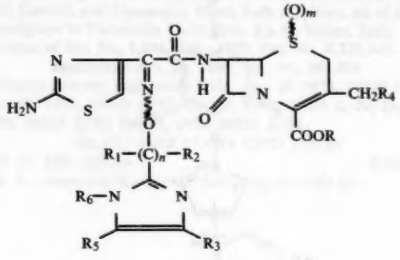
R_5 is hydrogen or methyl;
R_6 is hydrogen, methyl, benzyl or acetyl;
R_7 is hydrogen or lower alkyl;
R_8 is hydrogen or —$CONH_2$;
R_9 is hydrogen, lower alkyl,



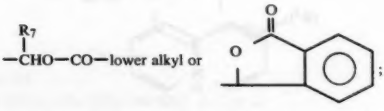


or —$(CH_2)_p$—N—(lower alkyl)$_2$;
R_{10} is hydrogen or lower alkyl;
R_{11} is hydrogen, sodium or potassium;
n is 1, 2, 3 or 4;
m is 0, 1 or 2;
p is 1, 2, 3 or 4.

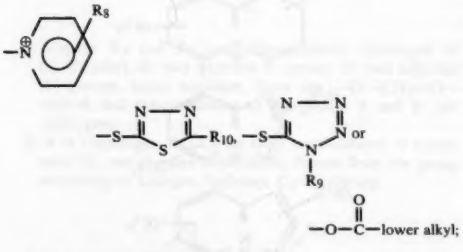
8. An antibacterial pharmaceutical composition comprising a pharmaceutically acceptable carrier and an effective amount of one or more antibacterially active compounds of the formula



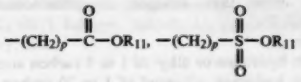
wherein
R is hydrogen, alkali metal,



R_1 is hydrogen or methyl;
R_2 is hydrogen or methyl;
R_3 is hydrogen or methyl;
R_4 is hydrogen, —$OCONH_2$,



R_5 is hydrogen or methyl;
R_6 is hydrogen, methyl, benzyl or acetyl;
R_7 is hydrogen or lower alkyl;
R_8 is hydrogen or —$CONH_2$;
R_9 is hydrogen, lower alkyl,



or —$(CH_2)_p$—N—(lower alkyl)$_2$;
R_{10} is hydrogen or lower alkyl;
R_{11} is hydrogen, sodium or potassium;
n is 1, 2, 3 or 4;
m is 0, 1 or 2;
p is 1, 2, 3 or 4.

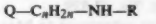
4,271,158

VASODILATING OR ANTIDEPRESSANT PHENALKANOLAMINOALKYL-SUBSTITUTED IMIDAZOLIDINONES

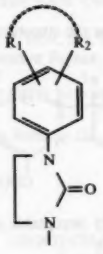
Anton Mentrup, Mainz-Kastel; Kurt Schromm, Ingelheim; Ernst-Otto Renth, Ingelheim, and Richard Reichl, Ingelheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Del.X

Division of Ser. No. 26,608, Apr. 3, 1979, which is a continuation-in-part of Ser. No. 773,394, Mar. 2, 1977, Pat. No. 4,154,829. This application Dec. 13, 1979, Ser. No. 102,904
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609645
Int. Cl.[3] **A61K** *31/535;* **C07D** *233/36*
U.S. Cl. 424—248.5 **4 Claims**

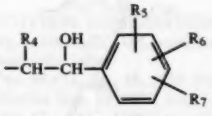
1. A racemic or optically active compound of the formula



wherein
Q is



where
R_1 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl or amino;
R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl; and
R_1 and R_2, together, are methylenedioxy or ethylenedioxy;
n is an integer from 2 to 6, inclusive; and
R is



where
R_4 is hydrogen, methyl or ethyl;
R_5, R_6 and R_7, which may be identical to or different from each other, are each hydrogen, halogen, hydroxymethyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro, cyano, —$CONHR_3$, —CONHOH, —$COOR_3$, R_8O—, methyl-

sulfonylmethyl or, when one or two of R_5 through R_7 are other than halogen or trifluoromethyl, also $—NR_3R_9$,

where

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_8 is hydrogen, alkanoyl of 1 to 20 carbon atoms, or benzyl, and

R_9 is hydrogen, lower alkanoyl, methanesulfonyl, carbamoyl, dimethylsulfamoyl, or alkoxycarbonyl of 2 to 5 carbon atoms, and

R_5 and R_6, together are $—O—CH_2—O—$, $—O—CH_2CH_2—O—$, $—CH=CH—CH=CH—$, $—O—CH_2—CONH—$, $—CH_2—CH_2—CONH—$ or $—O—CO—NH—$,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4. The method of dilating the blood vessels or relieving depression in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective vasodilating or anti-depressant amount of a compound of claim 1.

4,271,159

7-N-HETEROCYCLYL-2-SUBSTITUTED 1-OXADETHIA-CEPHALOSPORINS

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

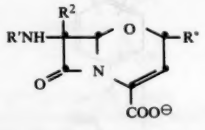
Filed Aug. 1, 1979, Ser. No. 62,829

The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.[3] **A61K** *31/44;* **C07D** *498/00;* **A61K** *31/47, 31/535*

U.S. Cl. 424—248.51 **9 Claims**

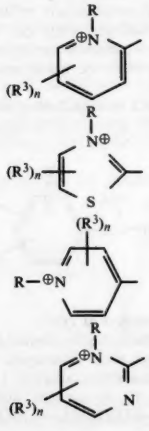
1. A compound having the structural formula:



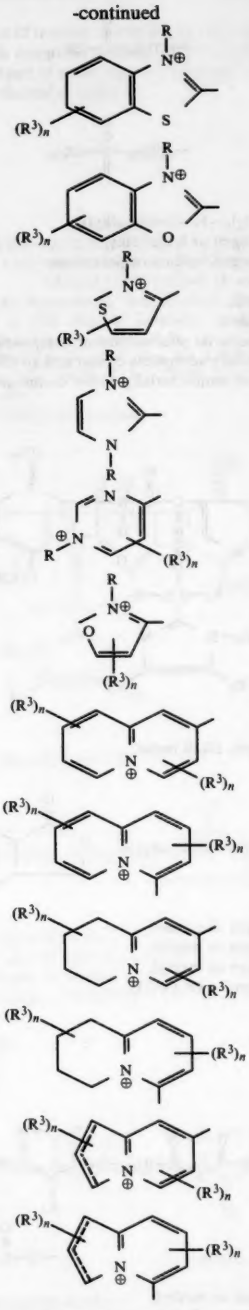
and the pharmaceutically acceptable salts and esters thereof wherein: R^* is H or CH_3;

R^2 is hydrogen or methoxyl;

R' is selected from the group consisting of:



-continued



wherein the dotted line indicates both saturated and unsaturated rings; and

wherein:

R is alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted: phenylalkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxyl, alkyl having from 1–6 carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxy having 1–6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3; and

R^7 is hydrogen, alkyl having 1–6 carbon atoms, phenylalkyl having 7 to 10 carbon atoms, or formyl.

8. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim **1** and a pharmaceutical carrier therefor.

4,271,160

SUBSTITUTED MORPHOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Piero Melloni, Bresso; Arturo Della Torre, Gallarate; Giovanni C. Carniel, and Alessandro Rossi, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

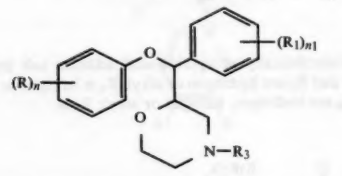
Division of Ser. No. 1,604, Jan., 1979, Pat. No. 4,229,449. This application Jun. 20, 1980, Ser. No. 161,509

Claims priority, application Italy, Jan. 20, 1978, 19449 A/78; Jan. 20, 1978, 19450 A/78; Dec. 5, 1978, 30533 A/78; Dec. 5, 1978, 30534 A/78; Dec. 5, 1978, 30535 A/78

Int. Cl.[3] **A61K** *31/535;* **C07D** *265/30*

U.S. Cl. 424—248.54 **8 Claims**

1. A compound having the following formula (I)



(I)

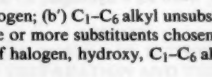
wherein

n and n_1 are, independently, 1, 2 or 3;

one or more of the groups R and R_1, which may be the same or different, is $—NO_2$ or

wherein R_5 and R_6 are, independently, hydrogen or C_1–C_6 alkyl, or two adjacent R groups or two adjacent R_1 groups, taken together, form the $—O—CH_2—O—$ radical; and the remainder of the groups R and R_1 are hydrogen;

R_3 is (a') hydrogen; (b') C_1–C_6 alkyl unsubstituted or substituted by one or more substituents chosen from the group consisting of halogen, hydroxy, C_1–C_6 alkoxy,



where R_5 and R_6 are as defined above; (c') C_2–C_4 alkenyl; C_2–C_4 alkynyl; (d') phenyl-C_1–C_4 alkyl, in which the phenyl group may be unsubstituted or substituted by one or more substituents chosen from the group consisting of C_1–C_6 alkyl, halogen, halo-C_1–C_6 alkyl, hydroxy, C_1–C_6 alkoxy, and

wherein R_5 and R_6 are as defined above; (e') C_3–C_7 cycloalkyl unsubstituted or substituted by one or more C_1–C_6 alkyl, halogen, halo-C_1–C_6 alkyl, hydroxy, C_1–Chd **6** alkoxy and

where R_5 and R_6 are as defined above;

and the pharmaceutically acceptable salts thereof.

8. An antidepressant composition comprising an antidepressant effective amount of a compound according to any one of claims **1**–**7** and a pharmaceutically acceptable carrier and/or diluent.

4,271,161

INDANE-ACETIC ACID AMINOESTERS, THEIR PREPARATION AND THEIR USE IN THERAPY

Jean M. Teulon, La Celle Saint Cloud, France, assignor to Hexachimie, France

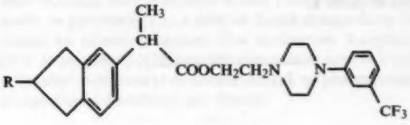
Filed Jul. 9, 1979, Ser. No. 55,907

Claims priority, application France, Jul. 24, 1978, 78 21849; May 28, 1979, 79 13532

Int. Cl.[3] **C07D** *295/10, 295/08*

U.S. Cl. 424—250 **8 Claims**

1. Indane esters of the formula (I):



(I)

in which R represents an ethyl or isopropyl group and their addition salts with acids.

5. A pharmaceutical composition comprising an analgesic effective amount of a compound claimed in claim **1** together with a pharmaceutically acceptable carrier.

4,271,162

ANTIVIRAL COMBINATIONS

Donald C. DeLong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 49,671, Jun. 18, 1979, Pat. No. 4,210,647. This application Nov. 19, 1979, Ser. No. 95,804

Int. Cl.[3] **A61K** *31/495, 31/13*

U.S. Cl. 424—250 **1 Claim**

1. A method of suppressing influenza virus infections in mammals which comprises administering by the oral route to a mammal exposed to influenza virus a virus-suppressing amount of a combination containing from 0.5–5 mg./kg. of ethyl 6,7-dichloro-4-dihydro-3-oxoquinoxaline carboxylate and from 0.3–3 mg./kg. of 1-aminoadamantane.

4,271,163

NOVEL 3,4-DIAZA-BICYCLO[4.1.0]HEPT-2-EN-5-ONES, THEIR PREPARATION, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Marco Thyes, Ludwigshafen; Josef Gries, Wachenheim; Hans D. Lehmann, Hirschberg-Leutershausen; Dieter Lenke, Ludwigshafen, and Johannes Kunze, Triftern, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

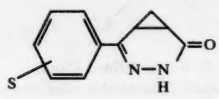
Filed Nov. 30, 1979, Ser. No. 98,854

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854475

Int. Cl.[3] **C07D** *237/26;* **A61K** *31/50*

U.S. Cl. 424—250 **17 Claims**

1. A 2-aryl-3,4-diaza-bicyclo[4.1.0]hept-2-en-5-one of the formula I



(I)

where S is p-alkyl of 1 to 4 carbon atoms, p-cycloalkyl of 4 to 6 carbon atoms in the ring, p-alkoxy of 1 to 3 carbon atoms, p-phenyl, p-halogen, p- or m-amino, m-nitro, p- or m-cyano, p- or m-(pyrrol-1-yl) or p- or m-acylamino of the formula —NH-COR^1, where R^1 is hydrogen, alkyl of 1 to 8 carbon atoms, which is unsubstituted or substituted by from one to six halogen atoms, cycloalkyl of 3 to 8 carbon atoms in the ring, which is unsubstituted or substituted by from one to four halogen atoms and/or alkyl radicals of 1 to 4 carbon atoms, alkenyl of 2 to 8 carbon atoms or phenyl which is unsubstituted or substituted by alkyl of 1 to 3 carbon atoms, by alkoxy of 1 to 3 carbon atoms or by a halogen atom.

10. A therapeutic agent for reducing hypertension and inhibiting thrombocyte aggregation in mammals which consists essentially of a pharmaceutically acceptable carrier or diluent and as an active compound an effective amount of a compound set forth in claim **1**.

4,271,164

6-SUBSTITUTED-ARYLPYRIDO[2,3-d]PYRIMIDIN-7-AMINES AND DERIVATIVES

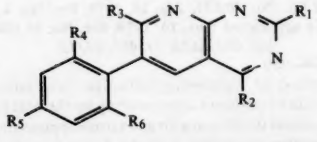
Clifton J. Blankley, Ann Arbor, and Lawrence R. Bennett, Chelsea, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 30,195, Apr. 16, 1979, abandoned. This application Mar. 11, 1980, Ser. No. 123,781

Int. Cl.[3] **C07D** *471/04;* **A61K** *31/495*

U.S. Cl. 424—251 **24 Claims**

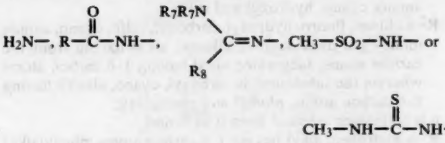
1. A compound having the formula



and pharmaceutically acceptable acid addition salts thereof;

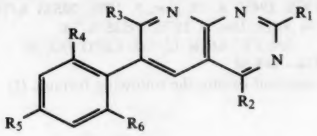
-continued

where R_1 and R_2 are hydrogen or alkyl; R_4 is halogen or alkyl; R_5 and R_6 are hydrogen, halogen, or alkyl; R_3 is

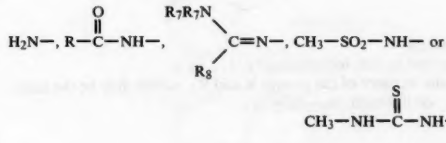


R is hydrogen, alkyl, haloalkyl, alkoxy, alkoxymethylene, mono- and dialkylamino, trifluoromethyl, furyl, pyridyl, or phenyl; R_7 is hydrogen or alkyl; R_8 is hydrogen or alkylamino; wherein alkyl and alkoxy have 1 to 3 carbon atoms; with the provisos that when R_3 is NH_2; R_2, R_5 and R_6 are hydrogen and (a) R_1 is hydrogen, R_4 is not chlorine; (b) R_1 is methyl, R_4 is not fluoro, iodo or ethyl; (c) R_1 is ethyl, R_4 is not chloro or methyl; when R_8 is hydrogen, R_7 is not hydrogen.

21. A pharmaceutical composition for treating hypertension in mammals comprising an effective amount of a compound having the formula:



or a pharmaceutically acceptable acid addition salt thereof; where R_1 and R_2 are hydrogen or alkyl; R_4 is halogen or alkyl; R_5 and R_6 are hydrogen, halogen or alkyl; R_3 is



R is hydrogen, alkyl, haloalkyl, alkoxy, alkoxymethylene, mono- and dialkylamino, trifluoromethyl, furyl, pyridyl or phenyl; R_7 is hydrogen or alkyl; and R_8 is hydrogen or alkylamino; wherein alkyl and alkoxy have 1 to 3 carbon atoms; with the privisos that when R_3 is NH_2; R_2, R_5 and R_6 are hydrogen and (a) R_1 is hydrogen, R_4 is not chlorine; (b) R_1 is methyl, R_4 is not fluoro, iodo or ethyl; (c) R_1 is ethyl, R_4 is not chloro or methyl; when R_8 is hydrogen, R_7 is not hydrogen.

4,271,165

Patent Not Issued For This Number

4,271,166
N-(1,3,4-THIADIAZOL-2-YL)BENZAMIDES

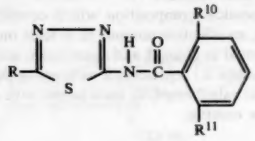
John S. Ward, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 824,687, Aug. 15, 1977, Pat. No. 4,141,984, which is a continuation-in-part of Ser. No. 740,166, Nov. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 656,552, Feb. 9, 1976, abandoned. This application Nov. 24, 1978, Ser. No. 963,659

Int. Cl.[3] A01N *43/40;* C07D *275/02, 417/04*

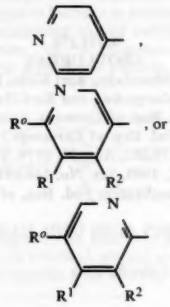
U.S. Cl. 424—263 11 Claims

1. A compound of formula



(I)

wherein R represents



wherein

R^0, R^1 and R^2 independently represent hydrogen, chloro or bromo, provided that at least one of R^0, R^1 and R^2 represents chloro or bromo;

R^{10} and R^{11} independently represent methyl or methoxy.

4,271,167
HYDROXYALKYL PYRID-2-YL DITHIOCARBAMATES, THEIR PREPARATION AND THEIR USE

Jean-Dominique Bourzat, Paris; Daniel Farge, Thiais; Andre Leger, Paris, and Gerard Ponsinet, Sucy-en-Brie, all of France, assignors to Rhone-Poulenc Industries, Paris, France

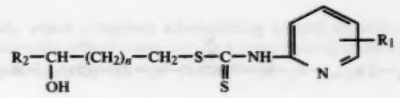
Filed Nov. 14, 1979, Ser. No. 94,288

Claims priority, application France, Nov. 16, 1978, 78 32388

Int. Cl.[3] K61K *31/44;* C07D *213/71*

U.S. Cl. 424—263 9 Claims

1. A compound of the formula:



wherein R_1 represents a hydrogen atom and either

(1) n is equal to 0 and R_2 represents a hydrogen atom, a hydroxymethyl, methylthiomethyl or phenyl radical, or

(2) n is equal to 1 and R_2 represents a hydrogen atom or a phenyl radical; or R_1 represents a chlorine atom in the 5-position, n is equal to 0 or 1 and R_2 represents a hydrogen atom or a methyl, phenyl, fluorophenyl or methylphenyl radical, and when they exist, the optical isomers of the aforesaid compound.

8. A pharmaceutical composition useful as an anthelmintic comprising an effective amount of a compound as claimed in claim 1 in association with a compatible, pharmaceutically acceptable diluent or adjuvant.

4,271,168
SELECTED 3-ACYLAMINO-5-[4(OR 3)-PYRIDINYL]-2(1H)-PYRIDINONES

George Y. Lesher, and Chester J. Opalka, Jr., both of Rensselaer, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,764

Int. Cl.[3] A61K *31/44;* C07D *213/57*

U.S. Cl. 424—263 10 Claims

1. 3-Acylamino-5-[4-(or 3)-pyridinyl]-2(1H)-pyridinone, where acyl is 2-acetoxypropanoyl, acetoacetyl or acetoxyacetyl, or pharmaceutically-acceptable acid-addition salt thereof.

8. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient an effective amount of a cardiotonic 3-acylamino-5-[4(or 3)-pyridinyl]-2(1H)-pyridinone, where acyl is 2-acetoxypropanoyl, acetoacetyl or acetoxyacetyl, or pharmaceutically-acceptable acid-addition salt thereof.

4,271,169
N-HETEROCYCLIC ALKYL-N'-PYRIDYL ALKYLTHIOUREAS, UREAS AND GUANIDINES

Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

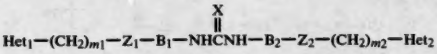
Division of Ser. No. 5,052, Jan. 22, 1979, Pat. No. 4,215,125, which is a division of Ser. No. 770,538, Feb. 22, 1977, Pat. No. 4,152,443, which is a division of Ser. No. 640,525, Dec. 15, 1975, Pat. No. 4,025,527, which is a continuation-in-part of Ser. No. 481,716, Jun. 21, 1974, abandoned. This application Dec. 20, 1979, Ser. No. 106,080

Claims priority, application United Kingdom, Jul. 13, 1973, 33428/73; Nov. 12, 1975, 46732/75

Int. Cl.[3] A61K *31/44;* C07D *401/12, 403/12, 413/12*

U.S. Cl. 424—263 10 Claims

1. A compound of the formula:



wherein one of Het_1 and Het_2 is pyridine and the other is imidazole, thiazole, isothiazole, oxazole, isoxazole, triazole or thiadiazole, said Het_1 and Het_2 being optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z_1 and Z_2 are sulphur or a methylene group; B_1 is $(CH_2)_{n1}$ and B_2 is $(CH_2)_{n2}$; m_1 and m_2 are 0, 1 or 2 and n_1 and n_2 are 2 or 3, provided that the sum of m_1 and n_1 and the sum of m_2 and n_2 are from 2 to 4; and X is sulphur, oxygen or NY wherein Y is hydrogen, cyano, $CONH_2$ or SO_2R_1 wherein R_1 is lower alkyl or phenyl, provided that when X is NH, at least one of Z_1 or Z_2 is sulphur, and that when X is NH the sum of m_1 and n_1 is 3 or 4 if Het_1 is imidazole and the sum of m_2 and n_2 is 3 or 4 if Het_2 is imidazole, or a pharmaceutically acceptable acid addition salt thereof.

10. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in an effective amount to inhibit said receptors a compound of claim **1**.

4,271,170

PYRIDINE DERIVATIVES

Tadao Tanouchi, Takatsuki; Masanori Kawamura, Ibaraki, and Masaki Hayashi, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka and Kissei Pharmaceutical Co., Ltd., Matsumoto, both of, Japan

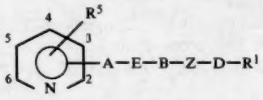
Filed Dec. 20, 1979, Ser. No. 105,672

Claims priority, application Japan, Dec. 28, 1978, 53/161966; Aug. 7, 1979, 54/100377

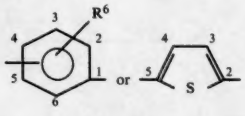
Int. Cl.[3] **A61K** *31/44;* **C07D** *213/55, 409/06*

U.S. Cl. 424—263 **76 Claims**

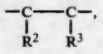
1. A pyridine derivative of the general formula



wherein A represents an alkylene group containing from 1 to 5 carbon atoms unsubstituted or substituted by a hydroxy group, B represents a single bond, or an akylene group containing from 1 to 5 carbon atoms, D represents a single bond, or an alkylene group containing from 1 to 5 carbon atoms, B represents a grouping of the formula:



in which R^6 represents a hydrogen atom, or an alkyl group containing from 1 to 4 carbon atoms, 2 represents a single bond, or an ethynylene group, or a grouping of the formula:



in which R^2 represents a hydrogen atom, or an alkyl group containing from 1 to 4 carbon atoms, R^3 represents a hydrogen, bromine or chlorine atom, or an alkyl group containing from 1 to 4 carbon atoms, the symbol ==== represents a single or double bond, the carbon atom attached to R^2 binds to B, and the carbon atom attached to R^3 binds, to D, R^1 represents a grouping of the formula: -COOR[4] or -COSR[4] in which R^4 represents a hydrogen atom, or an alkyl group containing from 1 to 12 carbon atoms, or an aralkyl group containing from 7 to 13 carbon atoms, or a cycloalkyl group containing from 4 to 7 carbon atoms unsubstituted or substituted by at least one alkyl group containing from 1 to 4 carbon atoms, or a phenyl group unsubstituted or substituted by at least one of a halogen atom, a trifluoromethyl group, an alkyl or alkoxy or alkylthio group, each containing from 1 to 4 carbon atoms, a nitro group or a phenyl group, R^5 represents a hydrogen atom, or an alkyl group containing from 1 to 4 carbon atoms, with the proviso that B, Z and D do not simultaneously each represent a single bond, and with the proviso that the pyridine ring is substituted by A at the 3- or 4-position thereof and non-toxic acid addition salts thereof and, when R^1 represents a carboxy or thiocarboxy group, non-toxic salts thereof.

76. A pharmaceutical composition which comprises, as an active ingredient, an effective amount of at least one pyridine derivative as claimed in claim **1** and a non-toxic acid addition salt thereof and, when R^1 represents a carboxy or thiocarboxy group, a non-toxic salt thereof, in association with a pharmaceutical carrier or coating.

4,271,171

AROYLUREAS

Annegrit Baumann, Mannheim; Karl Kiehs, Lampertheim; Heinrich Adolphi, Limburgerhof, and Karl-Heinz Koenig, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

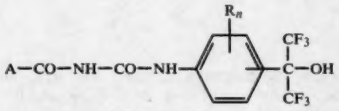
Division of Ser. No. 71,552, Aug. 30, 1979. This application May 2, 1980, Ser. No. 146,091

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839462

Int. Cl.[3] **A01N** *46/40;* **C07D** *213/82, 333/38*

U.S. Cl. 424—266 **3 Claims**

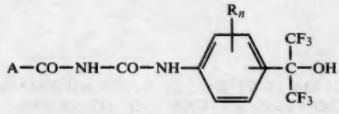
1. An aroylurea of the formula



I,

where A denotes a thienyl or pyridyl-3 radical which is mono- or polysubstituted by halogen, linear or branched alkyl of 1 to 4 carbon atoms, or linear or branched alkoxy of 1 to 4 carbon atoms, R denotes linear or branched alkyl of 1 to 4 carbon atoms or linear or branched alkoxy of 1 to 4 carbon atoms, and n denotes one of the integers 0,1 and 2.

3. A process for combating insects and mites, wherein an effective amount of an aroylurea of the formula



I,

where A denotes a phenyl, thienyl or pyridyl-3 radical which is mono- or polysubstituted by halogen, linear or branched alkyl of 1 to 4 carbon atoms, or linear or branched alkoxy of 1 to 4 carbon atoms, R denotes linear or branched alkyl of 1 to 4 carbon atoms or linear or branched alkoxy of 1 to 4 carbon atoms, and n denotes one of the integers 0,1 and 2, is allowed to act on the insects or mites, or on their habitat.

4,271,172

6-AMINO-SPIRO[PENAM-2,4'-PIPERIDINE]-3-CARBOXYLIC ACIDS, ANTIBACTERIAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

Ludovic Rodriguez, Brussels; Jacques Leclercq, Braine l'Alleud; Pierre Ykman, and Eric Cossement, both of Brussels, all of Belgium, assignors to U C B Societe Anonyme, Saint-Gilles-lez-Bruxelles, Belgium

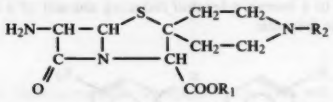
Filed Jun. 24, 1980, Ser. No. 162,616

Claims priority, application United Kingdom, Jun. 25, 1979, 22054/79

Int. Cl.[3] **C07D** *499/76;* **A61K** *31/43;* **C07D** *499/74, 499/58*

U.S. Cl. 424—267 **6 Claims**

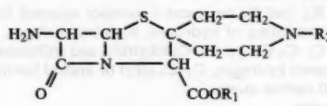
1. A 6-amino-spiro[penam-2,4'-piperidine]-3-carboxylic acid of the formula



(I)

wherein R_1 is a hydrogen atom, benzyl or an alkali metal or ammonium ion and R_2 is a methyl, phenyl or benzyl or a pharmaceutically acceptable acid addition salt thereof.

6. A method of treating infectious diseases caused by Gram-positive and Gram-negative bacteria in warm-blooded animals, which comprises administering to said animals an antibacterially effective amount of a 6-amino-spiro[penam-2,4'-piperidine]-3-carboxylic acid of the formula



wherein R_1 is a hydrogen atom, benzyl or an alkali metal or ammonium ion and R_2 is a methyl, phenyl or benzyl radical or a pharmaceutically acceptable acid addition salt thereof.

4,271,173

6-AMINO-SPIRO[PENAM-2,4'-PIPERIDINE]-3-CARBOXYLIC ACID, ANTIBACTERIAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

Ludovic Rodriguez, Brussels; Jacques Leclercq, Braine l'Alleud; Pierre Ykman, and Eric Cossement, both of Brussels, all of Belgium, assignors to U C B, Societe Anonyme, Saint-Gilles-lez-Brussels, Belgium

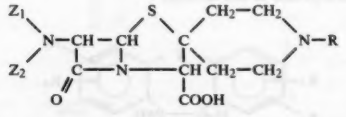
Filed Jun. 24, 1980, Ser. No. 162,615

Claims priority, application United Kingdom, Jun. 25, 1979, 22055/79

Int. Cl.[3] **C07D** *499/32;* **A61K** *31/425, 31/43*

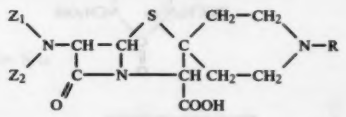
U.S. Cl. 424—267 **10 Claims**

1. A 6-amino-spiro[penam-2,4'-piperidine]-3-carboxylic acid having the formula



wherein R is a methyl, phenyl or benzyl, Z_1 is a hydrogen atom and Z_2 is a radical selected from the group consisting of phenylacetyl, 2-amino-2-phenylacetyl, 5-methyl-3-phenyl-4-isoxazolecarbonyl and 2,6-dimethoxybenzoyl, or Z_1 and Z_2 together represent (hexahydro-1H-azepin-1-yl)methylene, or a therapeutically acceptable non-toxic salt thereof.

10. A method of treating infectious diseases caused by Gram-positive and Gram-negative bacteria in warm-blooded animals, which comprises administering to said animals an antibacterially effective amount of a 6-amino-spiro[penam-2,4'-piperidine]-3-carboxylic acid of the formula



wherein R is a methyl, phenyl or benzyl, Z_1 is a hydrogen atom and Z_2 is a radical selected from the group consisting of phenylacetyl, 2-amino-2-phenylacetyl, 5-methyl-3-phenyl-4-isoxazolecarbonyl and 2,6-dimethoxybenzoyl, of Z_1 and Z_2 together represent (hexahydro-1H-azepin-1-yl)methylene, or a therapeutically acceptable non-toxic salt thereof.

4,271,174

CONTROL OF SHIPPING FEVER

David R. Bright, and Robert D. Williams, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 29, 1980, Ser. No. 154,551

Int. Cl.[3] **A61K** *31/42*

U.S. Cl. 424—272 **3 Claims**

1. A method for therapeutically treating mammals for the bacterial aspects of shipping fever caused by Pasteurella species, during incubation or during the symptomatic phase comprising parenterally administering to the mammal cycloserine in a dose sufficient to alleviate symptoms of shipping fever.

4,271,175

METHOD OF USING 2-[N-(2,6-DICHLORO-PHENYL)-N-ALLYL-AMINO]-2-IMIDAZOLINE AND SALTS THEREOF AS BRADYCARDIACS

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein; Dietrich Arndts, Appenheim, all of Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria, and Ludwig Pichler, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,966

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1979, 2831190

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 R **2 Claims**

1. The method of slowing the heart rate of a warm-blooded animal in need thereof, which comprises perorally or parenterally administering to said animal an effective bradycardiac amount of 2-[N-(2,6-dichloro-phenyl)-N-allyl-amino]-2-imidazoline or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,271,176

N-(HYDROXYMETHYL)-N-(1,3-DIHYDROXYMETHYL-2,5-DIOXO-4-IMIDAZOLIDINYL)-N'-(HYDROXYMETHYL)UREA USED AS A PRESERVATIVE AGENT

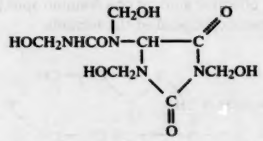
Philip A. Berke, Madison, and William E. Rosen, Summit, both of N.J., assignors to Sutton Laboratories, Inc., Chatham, N.J.

Filed Aug. 28, 1979, Ser. No. 70,502

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 R **2 Claims**

1. A method of protecting a product susceptible to microbial contamination by yeast and/or mold, comprising incorporating in said product an effective amount of a condensation product of formaldehyde and allantoin in the proportion of four moles of formaldehyde to one mole of allantoin, having the structural formula:



4,271,177

2,3,3A,12B-TETRAHYDRO-1H-DIBENZO[2,3;6,7]-THIEPINO[4,5-C]PYRROLES AND PHARMACEUTICAL USE THEREOF

Willem J. van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

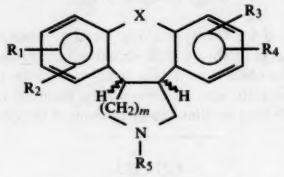
Division of Ser. No. 798,222, May 18, 1977, Pat. No. 4,145,434. This application Jun. 26, 1978, Ser. No. 918,981

Claims priority, application Netherlands, May 24, 1976, 7605526

Int. Cl.[3] A61K *31/38;* C07D *409/02*

U.S. Cl. 424—274 27 Claims

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof, wherein:

R_1, R_2, R_3, and R_4 each represent a member selected from the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbon atoms;

X represents sulfur;; and

m represents the number 1.

4,271,178

1,2,3,3A,8,12B-HEXAHYDRO-DIBENZO[B,F]PYRROLO[3,4-D]AZEPINES AND PHARMACEUTICAL USE THEREOF

Willem J. van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

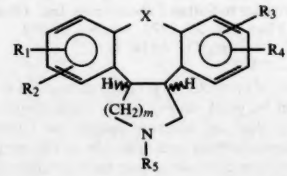
Division of Ser. No. 798,222, May 18, 1977, Pat. No. 4,134,434. This application Jun. 26, 1978, Ser. No. 919,196

Claims priority, application Netherlands, May 24, 1976, 7605526

Int. Cl.[3] A61K *31/55;* C07D *403/02*

U.S. Cl. 424—274 27 Claims

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof, wherein;

R_1, R_2, R_3, and R_4 each represent a member selected from the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkylthio, and trifluoromethyl;

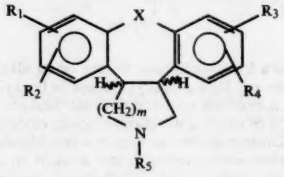
R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbon atoms;

X represents

wherein R_6 is a hydrogen or C_1–C_6 alkyl; and

m represents the number 1.

27. Method of reducing tension in humans, comprising administering to a human a tension reducing amount of a compound of the formula:



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof; wherein:

R_1, R_2, R_3, and R_4 represent a member selected from the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbon atoms;

X represents

wherein R_6 is a hydrogen or C_1–C_6 alkyl; and

m represents the number 1.

4,271,179

1,2,3,3 a,8,12b-HEXAHYDRO-DIBENZO[1,2;5,6]CYCLOHEPTA[3,4-c]PYRROLES AND PHARMACEUTICAL USE THEREOF

Willem J. van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

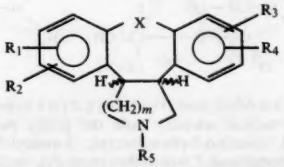
Division of Ser. No. 798,222, May 18, 1977, Pat. No. 4,145,434. This application Jun. 26, 1978, Ser. No. 923,606

Claims priority, application Netherlands, May 24, 1976, 7605526

Int. Cl.[3] A61K *31/40;* C07D *209/94*

U.S. Cl. 424—274 30 Claims

1. A compound of the formula



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof,

R_1, R_2, R_3, and R_4 each represent a member selected from

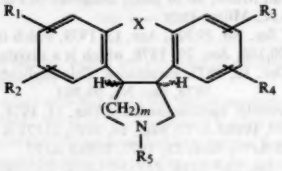
the group consisting of hydrogen, hydroxy, halogen C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbon atoms;

X represents —CH_2—; and

m represents the number 1.

30. Method of reducing tension in humans, comprising administering to a human a tension reducing amount of a compound of the formula:



or a pharmaceutically acceptable non-toxic salt or nitrogen oxide thereof;

wherein:

R_1, R_2, R_3, and R_4 represent a member selected from the group consisting of hydrogen, hydroxy, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, and trifluoromethyl;

R_5 represents hydrogen, C_1–C_6 alkyl or aralkyl having from 7 to 10 carbon atoms;

X represents CH_2; and

m represents the number 1.

4,271,180

SYNERGISTIC MIXTURE OF THREE PYRETHROID SERIES INSECTICIDAL COMPOUNDS

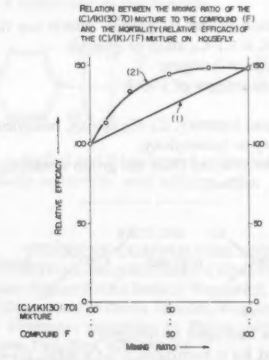
Takashi Yamaguchi, Nishinomiya; Goro Shinjo, and Yoshitoshi Okuno, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 17, 1979, Ser. No. 58,159

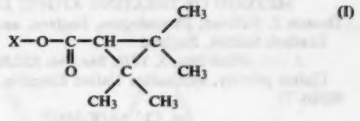
Claims priority, application Japan, Jul. 19, 1978, 53/88854

Int. Cl.[3] **A01N** *43/36, 43/08, 37/00, 37/08*

U.S. Cl. 424—274 **12 Claims**

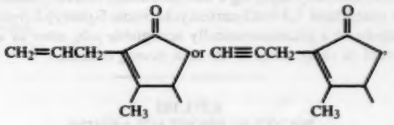

RELATION BETWEEN THE MIXING RATIO OF THE (C)/(K)(30 70) MIXTURE TO THE COMPOUND (F) AND THE MORTALITY (RELATIVE EFFICACY) OF THE (C)/(K)/(F) MIXTURE ON HOUSEFLY
RELATIVE EFFICACY
(C)/(K)(30 70) MIXTURE
COMPOUND F
MIXING RATIO
(1)
(2)

1. An insecticidal composition which contains an inert carrier and, as active ingredient, an insecticidally effective amount of a mixture comprising a pyrethroid series compound of the formula (I),

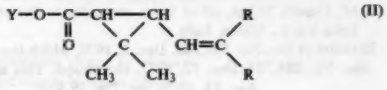


(I)

wherein X is

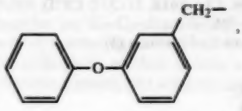


a pyrethroid series compound of the formula (II),

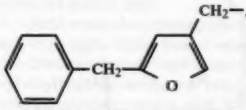


(II)

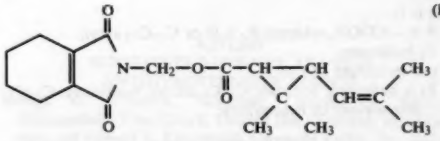
wherein when Y is



R is a methyl group or chlorine atom, and when Y is



R is a methyl group, and a pyrethroid series compound of the formula (III),



(III)

wherein a mixture of (I) and (III) in a ratio of 95:5 to 5:95 is mixed with (II) in a ratio of 90:10 to 40:60.

4,271,181

SYNERGISTIC INSECTICIDAL COMBINATIONS COMPRISING ENDOSULFAN AND 2-DIHALOVINYL-3,3-DIMETHYLCYCLOPROPANECARBOXYLATES

Paul H. Eastburg, Cherry Hill, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 22, 1976, Ser. No. 753,040

Int. Cl.[3] **A01N** *43/24, 37/00, 37/08, 37/06*

U.S. Cl. 424—276 **5 Claims**

1. A synergistic insecticidal composition consisting essentially of about 10 parts endosulfan per 1 part 3-phenoxybenzyl 2-(2,2-dichlorovinyl)-3,3-dimethylcyclopropanecarboxylate.

4,271,182

METHOD OF TREATING ATOPIC ECZEMA

Thomas J. Sullivan, Thrussington, England, assignor to Fisons Limited, Suffolk, England

Filed Dec. 9, 1974, Ser. No. 530,853

Claims priority, application United Kingdom, Dec. 19, 1973, 58986/73

Int. Cl.[3] A61K *31/35*

U.S. Cl. 424—283 1 Claim

1. A method for treating atopic eczema in man which comprises externally applying a therapeutically effective amount of the compound 1,3-bis(2-carboxychromon-5-yloxy)-2-hydroxypropane or a pharmaceutically acceptable salt, ester or amide thereof to those areas of the skin having eczema.

4,271,183

BICYCLIC PROSTAGLANDINS

Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, Milan; Roberto Ceserani, Milan, and Maria M. Usardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

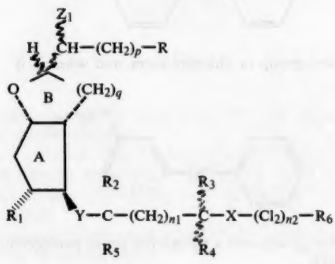
Division of Ser. No. 965,268, Dec. 1, 1978, which is a division of Ser. No. 859,703, Dec. 12, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,924

Claims priority, application Italy, Dec. 31, 1976, 31401 A/76; Jan. 14, 1977, 19283 A/77; Mar. 14, 1977, 21171 A/77; Mar. 21, 1977, 21412 A/77; Mar. 31, 1977, 21863 A/77

Int. Cl.[3] A61K *31/557;* C07D *307/935*

U.S. Cl. 424—285 18 Claims

1. A compound of formula (I)



(I)

where

q is 1;

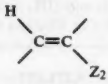
R is —$COOR_c$ wherein R_c is H or C_1–C_{12} alkyl;

Z_1 hydrogen;

p is an integer of 1 to 7;

R_1 is hydrogen, hydroxy, C_1–C_6 alkoxy, benzyloxy, C_2–C_{12} alkanoyloxy or benzoyloxy;

Y is



(trans), wherein Z_2 is halogen; one of R_2 and R_5 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl or phenyl, α-naphthyl or β-naphthyl, and the other is hydroxy, C_1–C_6 alkoxy, or benzyloxy; each of R_3 and R_4, which are the same or different, may be hydrogen, C_1–C_6 alkyl or fluorine;

n_1 is zero;

n_2 is zero or an integar of 1 to 6;

X is —$(CH_2)_m$—, wherein

m is zero or 1;

R_6 is:

(a') hydrogen; or

(b') methyl

and the pharmaceutically or veterinarily acceptable salts thereof.

4,271,184

BICYCLIC PROSTAGLANDINS

Carmelo Gandolfi, Milan; Carlo Passarotti, Callarate; Alessandro Andreoni, Cologne Monzese; Angelo Fumagalli, Monza; Franco Faustini, Milan; Roberto Ceserani, Milan, and Maria M. Usardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

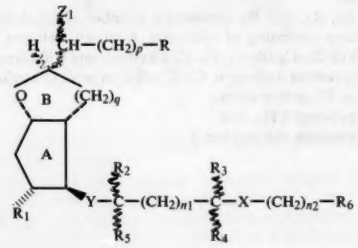
Division of Ser. No. 29,921, Apr. 13, 1979, which is a division of Ser. No. 920,166, Jun. 29, 1978, which is a division of Ser. No. 859,703, Dec. 12, 1977, abandoned. This application Nov. 30, 1979, Ser. No. 98,963

Claims priority, application Italy, Dec. 31, 1976, 31041 A/76; Jan. 14, 1977, 19283 A/77; Mar. 14, 1977, 21171 A/77; Mar. 21, 1977, 21412 A/77; Mar. 21, 1977, 21863 A/77

Int. Cl.[3] A61K *31/557;* C07D *307/935*

U.S. Cl. 424—285 21 Claims

1. A compound of formula (I)



wherein

R is a member selected from the group consisting of (a) —$COOR_c$ wherein R_c is hydrogen, C_1–C_{12} alkyl or C_2–C_{12} alkenyl; or

(b)

wherein each of the R' groups, which are the same or different, is C_1–C_6 alkyl or phenyl;

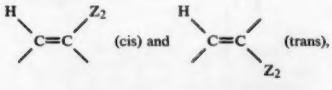
Z_1 is hydrogen or halogen;

p is zero or an integer of 1 to 7;

q is 1;

R_1 is hydrogen, hydroxy, C_1–C_6 alkoxy, benzyloxy, C_2–C_{12} alkanoyloxy or benzoyloxy;

Y is a member selected from the group consisting of —CH_2—CH_2—, —C≡C—,



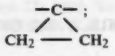
wherein Z_2 is hydrogen or halogen;

one of R_2 and R_5 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl or phenyl, α-naphthyl or β-naphthyl, and the other is hydroxy, C_1–C_6 alkoxy, benzyloxy, or R_2 and R_5, taken together, form an oxo group;

each of R_3 and R_4, which are the same or different, may be hydrogen, C_1–C_6 alkyl or fluorine or R_3 and R_4, taken

together, with the carbon atom to which they are linked, form the radical

or the radical



each of n_1 and n_2, which are the same or different, is zero or an integer of 1 to 6;

X is a member selected from the group consisting of —O—, —S— and $—(CH_2)_m—$, wherein m is zero or 1;

R_6 is a saturated or unsaturated pentatomic heteromonocyclic ring containing one oxygen atom, or a heterobicyclic ring containing one oxygen atom selected from the group consisting of 2-oxa-bicyclo [3.3.0] octyl, 2-oxa-bicyclo [3.4.0] nonyl and their aromatic analogs, said heteromonocyclic and heterobicyclic rings being unsubstituted or substituted by one or more substituents selected from the group consisting of halogen, halo-C_1–C_6-alkyl, C_1–C_6 alkyl and C_1–C_6 alkoxy, and the pharmaceutically or veterinarily accepted salts thereof.

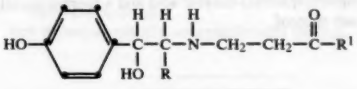
14. A pharmaceutical or veterinary composition, suitable for use as an anti-aggregating agent, said composition comprising a therapeutically effective amount of a compound as claimed in claim **5**, **6**, **7**, **8**, **9**, **10** or **11**, and a pharmaceutically and/or veterinarily acceptable carrier and/or diluent.

4,271,185
HETEROCYCLYL 2-(2-(4-HYDROXYPHENYL)-2-HYDROXY-1-METHYL)ETHYLAMINO)ETHYL KETONES AS LIPOGENESIS INHIBITORS

George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1980, Ser. No. 115,464
Int. Cl.³ A61K *31/34, 31/38*
U.S. Cl. 424—285 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of said treatment, orally or parenterally a lipogenesis inhibiting effective amount of a compound of the formula:



(I)

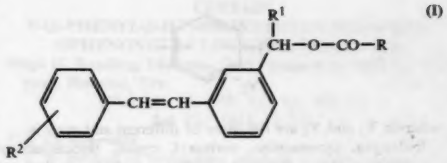
wherein R is methyl and R^1 is furanyl or benzofuranyl or their physiologically acceptable acid addition salts.

4,271,186
STILBENE COMPOUNDS AND INSECTICIDAL/ACARICIDAL COMPOSITIONS

Heinz Förster; Rainer Fuchs, both of Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,562
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832213
Int. Cl.³ A01N *37/34, 53/00;* **C07C** *69/743, 121/66*
U.S. Cl. 424—304 **13 Claims**

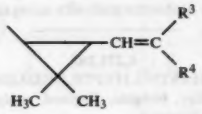
1. Stilbene compound of the formula



(I)

wherein

R is the radical



wherein

R^1 is hydrogen, cyano or ethynyl;

R^2 is hydrogen, halogen or alkyl;

R^3 is hydrogen, methyl, chlorine or bromine; and

R^4 is methyl, chlorine, bromine or optionally halogen-substituted phenyl,

or wherein

R^3 and R^4 together are C_2–C_6-alkanediyl.

13. A method of combating arthropods which comprises applying to the arthropods or their habitat a stilbene compound, in an effective amount, and wherein said compound is selected from

2,2-dimethyl-3-dichlorovinylcyclopropanecarboxylic acid 3'-(2-phenylvinyl)-benzyl ester

2,2-dimethyl-3-dibromovinyl-cyclopropanecarboxylic acid 3'-(2-phenylvinyl)-benzyl ester

2,2-dimethyl-3-dichlorovinyl-cyclopropanecarboxylic acid 3'-(2-phenylvinyl)-alpha-cyano-benzyl-ester

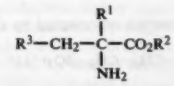
2,2-dimethyl-3-dibromovinyl-cyclopropanecarboxylic acid 3'-(2-phenylvinyl)alpha-cyanobenzyl ester, and alpha-isopropyl-4-tricfuoromethoxy-acetic acid 3-(2-phenylvinyl)-alpha-cyanobenzyl ester.

4,271,187
SUBSTITUTED PHENYL ALANINE ANTIHYPERTENSIVE AGENTS

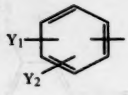
Joseph G. Atkinson, Montreal; Clarence S. Rooney, Beaconsfield; Yves Girard, Dollard Des Ormeaux, all of Canada, and Edward L. Engelhardt, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 912,593, Jun. 5, 1978, Pat. No. 4,206,216, which is a division of Ser. No. 825,013, Aug. 16, 1977, Pat. No. 4,153,715, which is a division of Ser. No. 657,827, Feb. 13, 1976, Pat. No. 4,065,572. This application Sep. 18, 1979, Ser. No. 76,650
Int. Cl.³ A61K *31/24;* **C07C** *79/46, 125/06, 101/30*
U.S. Cl. 424—309 **5 Claims**

1. A compound of the formula



wherein R^2 is hydrogen and R^1 is lower alkyl and R^3 is a substituted benzene ring of the formula



wherein Y_1 and Y_2 are the same or different and each is hydrogen, cyanoamino, carboxyl, cyano, thiocarbamoyl, aminomethyl, guanidino, nitro, amino, methanesulfonyloxy or carboxymethoxy, provided that Y_1 and Y_2 are not both hydrogen.

2. A composition for treating hypertension comprising a therapeutically effective amount of a compound of claim 1 in combination with a pharmaceutically acceptable carrier.

4,271,188
COMPOUNDS HAVING HYPOLIPIDAEMIC ACTIVITY

Richard M. Hindley, Reigate, England, assignor to Beecham Group Limited, England

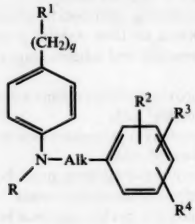
Continuation of Ser. No. 870,462, Jan. 18, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,418

Claims priority, application United Kingdom, Jan. 22, 1977, 2659/77

Int. Cl.[3] **A61K** *31/245, 31/24;* **C07C** *101/447, 101/60*

U.S. Cl. 424—309 **20 Claims**

1. A compound of formula (II):



(II)

wherein

R^1 represents carboxylic acid or a salt or ester thereof;

q is zero or an integer from 1 to 12;

Alk represents straight or branched chain alkylene;

R^2 and R^3 are the same or different and each is hydrogen, halogen, C_{1-8} alkyl, C_{1-8} alkoxy;

R^4 is hydrogen, halogen, C_{1-8} alkoxy, hydroxy or acylamino, or any two of groups R^2, R^3, R^4 represent a fused benzene ring; and R is methyl.

17. A pharmaceutical composition for the treatment or control of hyperlipidaemia comprising a pharmaceutically acceptable carrier together with a hypolipidaemically effective amount of a compound as claimed in claim 1.

4,271,189
LITHIUM DERIVATIVES OF TAURINE HAVING REINFORCED NEURO-MUSCULAR ACTIVITY

Jean P. Durlach, Paris, France, assignor to Les Laboratoires Meram, Paris, France

Continuation-in-part of Ser. No. 888,202, Mar. 20, 1978, Pat. No. 4,199,601. This application Dec. 14, 1979, Ser. No. 103,729

Claims priority, application France, Mar. 23, 1977, 77 08692

Int. Cl.[3] **C07C** *143/155;* **A61K** *31/195*

U.S. Cl. 424—315 **6 Claims**

1. A derivative of taurine represented by the formula:

$$(CH_3—CO—NH—CH_2—CH_2—SO_3)^-Li^+.$$

6. A method of treating manic-depressive psychosis by administering an effective amount of a compound as recited in claim 1.

4,271,190
GUANIDINIUM SALTS, PROCESSES FOR THEIR MANUFACTURE AS WELL AS MICROBICIDAL PREPARATIONS CONTAINING THESE COMPOUNDS

Günter Bertelmann; Ulrich Holtschmidt, and Arnold Laqua, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

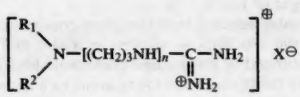
Continuation of Ser. No. 16,409, Mar. 1, 1979, abandoned. This application Apr. 17, 1980, Ser. No. 141,184

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808943

Int. Cl.[3] **A61K** *31/205;* **C07C** *129/12*

U.S. Cl. 424—316 **14 Claims**

1. A compound having the formula



in which the substituents

R^1 and R^2 are the same or different and represent linear alkyl residues with 8 to 16 carbon atoms,

X is an anion, and

n is 1 or 2.

13. A microbicidal preparation containing a microbicidally effective amount of the compound of claim 1 and a carrier therefor.

14. A method for sterilizing a substrate comprising applying a microbicidally effective amount of a composition composed of the compound of claim 1 and a carrier therefor.

4,271,191
METHOD OF TREATING HYPERURICEMIA AND GOUT

France Mazoyer, Castres, France, assignor to Pierre Fabre S.A., Paris, France

Filed Dec. 19, 1979, Ser. No. 105,420

Int. Cl.[3] **A61K** *31/19, 31/505, 31/165*

U.S. Cl. 424—317 **7 Claims**

1. A method for the treatment of hyperuricemia which comprises orally administering to a hyperuricemic subject in need thereof an effective hypouricemic amount of a compound selected from the group consisting of 2-methylene 4-oxo 4-(4'-ortho-chlorophenylphenyl)-butyric acid and a therapeutically-acceptable salt thereof.

4,271,192
PROCESS FOR TREATMENT AND PREVENTION OF VENTRICULAR FIBRILLATION

Richard J. Wurtman, Boston, and Bernard Lown, Chestnut Hill, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 19, 1980, Ser. No. 122,422

Int. Cl.[3] **A61K** *31/195, 31/49, 31/44, 31/415*

U.S. Cl. 424—319 **2 Claims**

1. The process for reducing the risk of ventricular fibrillation in an animal having a condition associated with ventricular fibrillation which comprises administering tyrosine to said animal in an amount effective to reduce the risk of ventricular fibrillation.

4,271,193

N1-BENZOYL-N2-PHENYLDIAMINOPROPANOLS AND PHARMACEUTICAL COMPOSITIONS THEREOF, AND PROCESSES FOR THEIR PREPARATION

Hans Liepmann; Rolf Hueschens, both of Hanover; Wolfgang Milkowski, Burgdorf; Horst Zeugner; Henning Heinemann, both of Hanover; Klaus-Ulrich Wolf, Haenigsen; Insa Hell, and Reinhard Hempel, both of Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

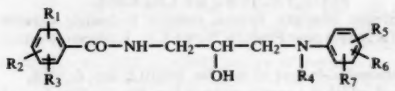
Filed Jun. 22, 1979, Ser. No. 51,227

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827801

Int. Cl.[3] A61K *31/335, 31/36, 31/165*

U.S. Cl. 424—324 24 Claims

1. A method for treating and prophylaxis of acute and chronic gastritis in larger mammals, which comprises the step of orally administering to a larger mammal an effective amount of at least one compound said compound being selected from the group of N_1-benzoyl-N_2-phenyl-1,3-diaminopropan-2-ols having the formula I



I

wherein

R_1, R_2 and R_3 are the same or different from each other and each represents hydroxy, benzyloxy, chlorbenzyloxy or alkoxy containing 1 to 4 carbon atoms, or

R_1 is as defined above and R_2 and R_3 together represent methylenedioxy and ethylenedioxy, or

R_1 and R_2 represent methoxy and R_3 represents allyloxy or propargyloxy;

R_4 represents hydrogen, alkyl containing 1 to 4 carbon atoms, β-hydroxytehyl, or β-methoxyethyl, and

R_5, R_6 and R_7 are the same or different from each other and R_5 and R_6 each represents hydrogen, fluorine, chlorine, bromine, iodine, alkyl containing 1 to 4 carbon atoms, or alkoxy containing 1 to 4 carbon atoms; or

R_5 and R_6 together represent methylenedioxy or ethylenedioxy, and R_7 represents hydrogen, fluorine, chlorine, bromine, iodine, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 3 carbon atoms, trifluoromethyl or nitro;

with the proviso that if R_1, R_2 and R_3 each represents methoxy and is situated in 3, 4 and 5 position and R_4 is methyl, no more than 2 of the substituents R_5, R_6 and R_7 represent hydrogen,

and pharmaceutically acceptable salts thereof.

4,271,194

SEDATIVE COMPOSITIONS CONTAINING (3,4-DICHLOROPHENYLSULPHINYL)-ACETAMIDOXIME AND ITS ADDITION SALTS AND METHOD OF USE

Victor Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons-Alfort, France

Continuation of Ser. No. 899,860, Apr. 25, 1978, abandoned. This application Jun. 13, 1979, Ser. No. 48,179

Claims priority, application France, Apr. 29, 1977, 77 13043

Int. Cl.[3] A61K *31/155;* C07C *123/00*

U.S. Cl. 424—326 2 Claims

1. A therapeutic sedative composition useful in the treatment of aggressiveness which contains, together with a physiologically acceptable excipient, at least one compound chosen from (3,4-dichlorophenyl-sulphinyl)-acetamidoxime and its pharmaceutically acceptable acid addition salts.

4,271,195

CERTAIN N-(β-PHENYL-β-HYDROXYETHYLAMINO)PROPIOPHENONES AS LIPOLYSIS PROMOTERS

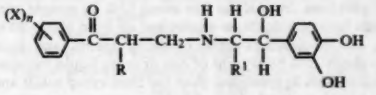
Hugh H. Keasling, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 14, 1980, Ser. No. 111,735

Int. Cl.[3] A61K *31/135*

U.S. Cl. 424—330 2 Claims

1. A method of promoting lipolysis in swine which comprises administering, to a pig in need of such treatment, orally or parenterally, an effective dosage of a compound of the formula:



(I)

wherein n is zero, one or two, X is hydroxy, alkoxy of from one to four carbon atoms, chlorine or nitro, and R and R^1 each is hydrogen or methyl, and their physiologically acceptable acid addition salts.

4,271,196

PHARMACEUTICAL COMPOSITIONS FOR PARENTERAL OR LOCAL ADMINISTRATION

Dieter Schmidt, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 16, 1979, Ser. No. 94,813

Claims priority, application Switzerland, Nov. 21, 1978, 11921/78

Int. Cl.[3] A61K *31/685, 47/00*

U.S. Cl. 424—358 7 Claims

1. An aqueous colloidal composition which comprises a combination of dihexanoyl lecithin and non-hemolytic lipid selected from the group consisting of egg lecithin, soya lecithin, dipalmitoyl lecithin, dimyristoly lecithin, phosphatidyl inositol, monoolein and monolinolein, wherein the concentration of the combination ranges from about 50 mg per ml to about 200 mg per ml of the aqueous colloidal composition and wherein the mole ratio of dihexanoyl lecithin to non-hemolytic lipid ranges from about 1:3 to about 1:1.

4,271,197

CHEWING GUM CONTAINING SUGAR SUBSTITUTE

Walter Hopkins, 175 Hobart Ave., Greenwich, Conn. 06830; Dominick R. Friello, King St., Danbury, Conn. 06810; Subraman R. Cherukuri, 3 Mendes Rd., Danbury, Conn. 06810; Raymond L. Roy, 38 Grammar School Dr., Danbury, Conn. 06810, and Donald A. M. Mackay, 135 Deerfield La., Pleasantville, N.Y. 10570

Filed Jun. 21, 1979, Ser. No. 50,573

Int. Cl.[3] A23G *3/30*

U.S. Cl. 426—3 20 Claims

1. A chewing gum having improved softness retention and flexibility and excellent extrudability consisting essentially of from about 8 to about 50% by weight of gum base, from about 2 to about 70% by weight of a hydrogenated starch hydrolysate the solids portion of which comprises from about 4 to about 20% sorbitol, from about 5 to about 65% hydrogenated disaccharides, from about 15 to about 75% tri- to hepta-hydrogenated saccharides, and from about 10 to about 65% hydrogenated saccharides higher than hepta, and further including from 0 to about 85% by weight sorbitol in addition to said sorbitol present in said hydrogenated starch hydrolysate, from 0 to about 20% by weight mannitol, optionally xylitol, from 0 to about 90% by weight of a natural sugar, optionally artificial sweeteners in addition to sorbitol and the hydrogenated starch hydrolysate, from 0 to about 15% by weight calcium carbonate, from 0 to about 2% by weight lecithin,

from 0 to about 8.4% by weight gum arabic, from 0 to about 4% by weight glycerin, and flavor.

4,271,198

CHEWING GUM HAVING A SOFT TEXTURE

Subraman R. Cherukuri; Dominick R. Friello, both of Danbury, Conn.; Walter Jewell, Mamaroneck, and Donald A. M. Mackay, Pleasantville, both of N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,069
Int. Cl.[3] A23G *3/30*
U.S. Cl. 426—3 **11 Claims**

1. A chewing gum having a soft discontinuous texture and easy bite through comprising from about 8 to about 50% by weight of gum base, from about 2 to about 15% by weight corn syrup solids having a dextrose equivalent of from about 20 to about 95, one or more sweetener-bulking agents, and from about 5 to about 25% by weight of one or more liquid moisturizers which are less hygroscopic than the corn syrup solids and including liquid sorbitol, high fructose corn syrup, invert sugar, sugar syrup or water, or mixtures thereof, said liquid moisturizers being at least initially separated from the corn syrup solids, the chewing gum having an initially hard consistency which upon standing changes to a soft consistency as the liquid from the liquid moisturizer is absorbed by the corn syrup solids.

4,271,199

SUGAR-CONTAINING CHEWING GUM HAVING SMOOTH TEXTURE AND LONG-LASTING SWEETNESS

Subraman R. Cherukuri, Danbury, Conn.; Walter Vink, Purdys Station, N.Y.; Dominick R. Friello, Danbury, Conn., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,961
Int. Cl.[3] A23G *3/30*
U.S. Cl. 426—5 **15 Claims**

1. A chewing gum having long-lasting sweetness, a soft and smooth consistency, an amorphous bite through, and non-stick properties, which comprises from about 8 to about 50% by weight gum base; and from about 40 to about 85% by weight of a preformed recrystallized sweetener combination formed of one or more solid sweeteners and one or more liquid sweeteners which coat said solid sweeteners, said combination comprising at least two natural sweeteners which have been recrystallized as a mixture, and dispersed as said recrystallized mixture in said gum base; and one or more flavors dispersed in said gum base; whereby crystals of solid sweetener in said preformed recrystallized sweetener combination are reduced in size, becoming more round, more smooth and slippery, due to the interaction with said liquid sweeteners present in said combination, thereby contributing to soft easy bite through and imparting a fondant-like structure to the chewing gum.

4,271,200

METHOD OF PREPARING A FROZEN PIZZA

Walter L. Hempenius, Cary, and June E. Yantis, Barrington, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 63,997
Int. Cl.[3] A21D *8/00*
U.S. Cl. 426—27 **3 Claims**

1. A method of manufacturing a frozen pizza product, said method comprising preparing a leavened bread dough formulation from which a pizza crust may be formed, forming at least a portion of said dough into an individual dough ball, positioning said dough ball within a forming apparatus which includes a flat central portion and an at least partially vertically directed, circumferentially extending peripheral sidewall, permitting said dough portion to rise, exerting a first downward force on said dough ball with a first pressing platen unit having a given diameter and a flat, downwardly directed surface portion, thereby forming a thin flat dough sheet of substantially uniform density, with the outer periphery of said dough sheet extending sufficiently outwardly so as to lie closely adjacent said peripheral sidewall, permitting said flat sheet to undergo additional rising, subsequently exerting a second downward force on said dough sheet with a second pressing platen, said second pressing platen having a reduced diameter in respect to said given diameter of said first platen, said second platen also having a flat, downwardly directed surface, thereby depressing a central portion of said flat dough sheet to increase the density of said center section and to permit the outer margin of said sheet to rise naturally while confined only by said sidewall, and substantially immediately after depressing said central portion of said sheet, removing said sheet from said forming apparatus and at least partially baking said sheet while said center section remains depressed so as to create a pizza crust having a high density center section of reduced height and a raised margin of reduced density, adding to said pizza crust a pizza sauce filling preparation, and freezing said combination crust and filling portion into a frozen pizza product.

4,271,201

MANUFACTURE OF CHEESES

Pierre Stenne, Marigny, France, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 940,012, Sep. 6, 1978, abandoned, which is a continuation of Ser. No. 758,825, Jan. 12, 1977, abandoned. This application Jan. 23, 1979, Ser. No. 5,730
Claims priority, application France, Feb. 4, 1976, 76 03119
Int. Cl.[3] A23C *19/02, 21/00*
U.S. Cl. 426—40 **9 Claims**

1. A process for treating curd in preparation for producing cheeses comprising:

(a) subjecting a milk having a total serum protein content to partial ultrafiltration wherein before, during, or after this ultrafiltration step, heat denatured serum proteins are added to the milk;

(b) treating the partially ultrafiltered milk with rennet and/or acid;

(c) coagulating the rennetted and/or acidified milk to form a curd containing 15 to 30 parts of total serum proteins to 50 parts of casein wherein from ¼ to ½ of the total serum proteins now contained in the curd are said heat denatured serum proteins; and

(d) draining the curd to remove whey therefrom, said whey containing soluble proteins therein wherein the amount of total serum protein contained in the curd is substantially equal to the total serum protein content of the starting milk.

4,271,202

PARTICULATE LACTOSE-STARCH HYDROLYSATE BASED FLAVORING MATERIALS AND METHOD OF PRODUCING SAME

Thomas H. Giel, Cincinnati, Ohio, assignor to Mallinckrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 853,526, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 640,189, Dec. 12, 1975, abandoned. This application Aug. 6, 1979, Ser. No. 64,053
Int. Cl.[3] A23L *1/221*
U.S. Cl. 426—96 **12 Claims**

1. A particulate flavoring material comprising a flavoring oil fixed in a particulate matrix, said particulate matrix consisting essentially of lactose and a partially hydrolyzed starch having a Dextrose Equivalent from about 1 to about 20 wherein the ratio of lactose to starch hydrolysate is on the order of about 40–70% by weight lactose to about 60–30% by weight starch hydrolysate and at least about 30% flavoring oil per total particulate material is entrapped in the matrix with less than about 4% by volume flavoring oil per total particulate material unentrapped on the surface of said particulate matrix.

4,271,203

MICROWAVE PROOFING AND BAKING BREAD UTILIZING METAL PANS

Robert F. Schiffmann, Manhattan; Alfred H. Mirman, Nanuet, and Richard J. Grillo, Hawthorne, all of N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 700,942, Jun. 29, 1976, abandoned. This application Jun. 20, 1979, Ser. No. 50,396
Int. Cl.[3] A21D 8/06
U.S. Cl. 426—243 2 Claims

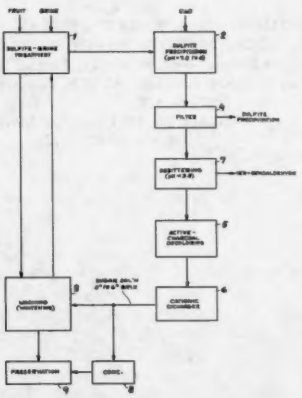
1. A method for processing bread comprising the steps of:
forming a plurality of one pound loaves from a bread dough mixture;
placing each of said plurality of loaves in a different one of a plurality of metal baking pans;
partially proofing said plurality of loaves in said baking pans in a hot air oven at 85° F. to 120° F. with a relative humidity of 40% to 85% for a first time period of 20 to 40 minutes;
finish proofing said partially proofed plurality of loaves utilizing microwave energy having a frequency equal to 915 MHz and 2450 MHz simultaneously, a power of 75 to 107 watts per pound loaf divided between said two frequencies and a flux density of from 5 to 10 watt hours per pound for a second time period of 3 to 10 minutes; and
baking said finish proofed plurality of loaves in a combined hot air and microwave oven at an air temperature of 415° F. to 440° F. and with microwave energy having a frequency equal to 915 MHz and 2450 MHz simultaneously, a power of 50 to 100 watts per pound loaf divided between said two frequencies and a flux density of from 5 to 10 watt hours per pound for a third time period of 11 to 13 minutes to achieve bake out and crust color.

4,271,204

SULFITE TREATMENT OF CHERRIES

Henri C. P. Julien, Vaucluse, France, assignor to APTUNION Union des Fabricants de Fruits Confits, Vaucluse, France

Filed Aug. 10, 1979, Ser. No. 65,624
Claims priority, application France, Aug. 30, 1978, 78 25572
Int. Cl.[3] A23L 1/277; A23B 7/14
U.S. Cl. 426—259 3 Claims



1. A method of preserving cherries, containing natural sugars, which comprises the steps of:
(a) storing the cherries in a sulfite brine;
(b) removing the cherries from the sulfite brine;
(c) removing from the sulfite brine in sequential order sulfite, taste-embittering substances including amygdalin and coloring substances, and further removing minerals by passing the treated brine through a cationic exchange resin fortified with acid to result in a purified sugar solution;
(d) washing the cherries resulting from step (b) with a first portion of the purified sugar solution so that during the washing the purified sugar solution and the cherries have substantially the same sugar level of 5° to 6° Brix; and
(e) recycling the resulting sugar solution used in washing step (d) to the sulfite brine used to initially remove sugar from the cherries.

4,271,205

METHOD FOR MANUFACTURING QUICKLY COOKABLE DRY AND POROUS NOODLES

Yoshio Kaneko, Kofu, Japan, assignor to Toyo Suisan Kaisha, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 964,295, Nov. 28, 1978, abandoned. This application Jun. 13, 1979, Ser. No. 48,008
Claims priority, application Japan, Dec. 23, 1977, 52/155183
Int. Cl.[3] A23L 1/16
U.S. Cl. 426—451 6 Claims

1. A method for manufacturing dry and porous alpha-type noodles which can be cooked in about three minutes by boiling water which is poured into a container containing said dry and porous noodles comprising
continuously passing masses of steamed wet noodles substantially horizontally into and through a substantially sealed drying chamber,
blowing in said drying chamber superheated steam at a temperature of 105° C. to 180° C. at atmospheric pressure onto and through said masses of steamed wet noodles as said noodle masses pass through said drying chamber for 5 to 10 minutes, whereby water vapor is evolved in a boiling state from the interior of the steamed wet noodles thereby forming dry and porous noodles, and said evolved water vapor in a boiling state is heated and circulated in said chamber at a temperature of 105° C. to 180° C. to constitute said superheated steam; and
discharging the dry and porous noodles from the substantially sealed drying chamber; and cooling the discharged dry and porous noodles in atmospheric air to provide said dry and porous alpha-type noodles.

4,271,206

GASIFIED CANDY HAVING A PREDETERMINED SHAPE

Harry F. Fariel, Suffern, N.Y.; Marvin J. Rudolph, Bethel; Richard B. Hynson, New Fairfeild, both of Conn.; Pradip K. Roy, Yorktown, and Fredric Kleiner, New City, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,720
Int. Cl.[3] A23G 3/00
U.S. Cl. 426—572 11 Claims

1. A method of preparing a confection of discrete and uniform predetermined shaped pieces of gasified, hard candy which comprises:
(a) preparing a melt of sugar between about 280°–320° F.,
(b) gasifying the melt under superatmospheric pressure of 35–500 psig, while the melt is uniformly agitated,
(c) forming the melt into discrete and predetermined shaped pieces under superatmospheric pressure,
(d) solidifying the pieces under superatmospheric pressure so as to retain the gas under superatmospheric pressure within the pieces, and
(e) recovering the solidified predetermined shaped pieces, said pieces of gasified candy having a uniform shape and having retained therein from 0.25 to 5.0 cc of gas per gram of candy, said gas being distributed through the candy as fine bubbles, more than 50% of said bubbles having a diameter below 60 microns and said gas being at superatmospheric pressure, said uniform pieces giving a prolonged sizzling sensation when permitted to dissolve in the mouth.

4,271,207

PROCESS FOR THE COATING OF PARTICLES FOR THE PRODUCTION OF FUEL AND/OR ABSORBING ELEMENTS FOR NUCLEAR REACTORS AND APPARATUS THEREFOR

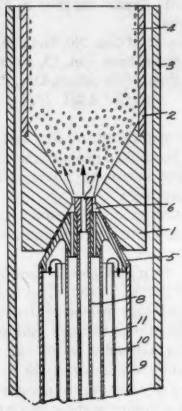
Harald Löser, Kahl; Gerhard Schmidt, Gelnhausen; Wolfgang Warzawa, and Klaus Wegner, both of Hanau, all of Fed. Rep. of Germany, assignors to HOBEG Hochtemperaturreaktor-Brennelement GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 10, 1977, Ser. No. 805,452

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626446

Int. Cl.[3] C23C *11/02*

U.S. Cl. 427—6 5 Claims



1. In a process for coating particles of fuel, fertile material, absorber material or mixtures thereof which can be employed in nuclear reactors wherein thermally cleavable gases are introduced into a reaction space heated above 1000° C. of a fluidized bed unit provided with a gas inlet nozzle having an elongated inlet tube and cooled with a cooling medium, the cleavable gases are decomposed after leaving said nozzle and the decomposition products are deposited on said fuel, fertile material or absorber particles present in the fluidized bed, the improvement comprising employing as the cooling medium one which is solely gaseous and only cooling the axially inner lying portion of the feed conduit for the nozzle tip of the gas inlet nozzle and reducing the heat flow from the outside by a heat insulating material.

4,271,208

METHOD FOR COATING A METALLIC SQUEEZE-OUT TUBE

Tsutomu Itoh, Tokyo; Nobuo Furuya, and Kenji Ohuchi, both of Chiba, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

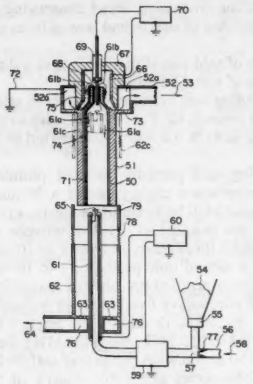
Division of Ser. No. 827,890, Aug. 26, 1977, Pat. No. 4,213,541, which is a continuation of Ser. No. 762,504, Jan. 26, 1977, Pat. No. 4,112,869. This application Jan. 29, 1979, Ser. No. 7,390

Claims priority, application Japan, Feb. 3, 1976, 51-10005; Mar. 8, 1976, 51-24867

Int. Cl.[3] B05D *1/04, 1/06*

U.S. Cl. 427—28 16 Claims

1. A method for coating portions of an uncoated, metallic squeeze-out tube with a synthetic resin coating film comprising the steps of supporting an uncoated, metallic squeeze-out tube, said tube having two ends, a reduced diameter neck with an opening therein at one end, a neck end surface, inner and outer neck surfaces, and an opening in the second end of said tube, said second end being opposite said neck end; ejecting electrically-charged synthetic resin powder from a powder feeding means inserted within said tube through said second end, feeding such powder along the length of the interior of the metallic squeeze-out tube with said powder feeding means while applying an electrical voltage differential between said tube and said feeding means such that said powder is drawn by electrostatic force to and covers at least portions of the interior surfaces of said tube and forms a synthetic resin powder layer thereon, and directing electrically-charged synthetic resin powder through said neck with an air flow with suction by drawing air through said neck and across the entirety of said neck end surface with an electrode surrounding but spaced from the neck end and



outer neck surfaces and disposed concentrically of said neck opening; providing an electric field for urging powder to said neck with said electrode by applying an electrical voltage differential between said electrode and neck such that said powder is drawn by electrostatic force to said neck and covers the inner neck surface and said entire neck end surface; and baking the powder layer on said tube with a heating device whereby said powder is caused to form a continuous, solidified, synthetic resin coating film tightly adhered to the said interior and neck end surface portions of said tube.

4,271,209

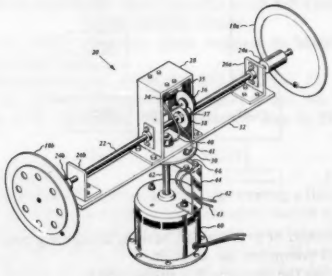
METHOD AND APPARATUS FOR COATING THE GROOVED BOTTOMS OF SUBSTRATES

Vito A. DePalma; Anne E. Meyer, both of Tonawanda, and Albert K. Ashby, Lancaster, all of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Apr. 16, 1980, Ser. No. 140,906

Int. Cl.[3] B05D *5/12*

U.S. Cl. 427—58 18 Claims



1. A method of coating a substrate having at least one groove in a face thereof, including the steps of:

(1) applying a fluent coating material to said substrate,

(2) spinning the substrate about an axis perpendicular to the face thereof at a first rate,

(3) simultaneously rotating said substrate about an axis perpendicular to said first mentioned axis at a second rate that is much greater than said first rate, and

(4) scraping excess coating material from the face of the substrate.

14. A spin/centrifuge apparatus for use in a coating process and including:

at least one pair of arms mounted for rotation about a vertical axis;

shaft means supported by said arms for rotation therewith about said vertical axis;

means for independently spinning said shaft means about a horizontal axis;

mounting means at the ends of each of said shaft means for securing the objects to be coated whereby said objects are subject to centrifugal forces due to rotation about said vertical axis which forces a coating material into contact with said objects and whereby said objects are simultaneously subject to spin forces due to said horizontal axis spin to uniformly spread the coating material.

4,271,210

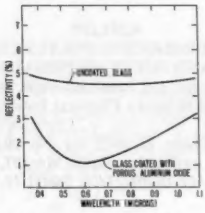
METHOD OF FORMING TRANSMISSIVE, POROUS METAL OXIDE OPTICAL LAYER OF A VITREOUS SUBSTRATE

Bulent E. Yoldas, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 88,280, Oct. 25, 1979, abandoned. This application Jan. 28, 1980, Ser. No. 116,329

Int. Cl.³ B05D *1/18, 3/02*

U.S. Cl. 427—169 **3 Claims**



1. Method of forming a substantially transparent, porous thin layer of aluminum oxide on a vitreous substrate, which aluminum oxide layer has an index of refraction substantially less than that of the vitreous substrate, which method comprises:

(a) preparing a clear solution from aluminum alkoxide, which solution is peptized or polymerized with the aluminum maintained in a clear soluble form in a concentration of about 1 to 3% based on the equivalent weight of aluminum oxide;

(b) dipping the vitreous substrate in the clear solution and withdrawing the substrate therefrom at a rate of about seven centimeters per minute to deposit a layer of the clear solution on the vitreous substrate;

(c) pyrolyzing the layer on the substrate by heating to a temperature of from 300°–500° C. to form the porous aluminum oxide layer of low index of refraction, a porosity of greater than 40%, and pore size of less than about 100 angstroms, and a layer thickness of approximately an optical quarter wave.

4,271,211

PROCESS FOR MAKING PLASTIC RESIN-DYESTUFF CONCENTRATES FOR USE IN THE DYEING OF PLASTIC RESINS

Siegfried Knepper, Radevormwald, Fed. Rep. of Germany, assignor to Karl Finke OHG, Wuppertal-Barmen, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,864

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811922

Int. Cl.³ B05D *3/00*

U.S. Cl. 427—195 **5 Claims**

1. A process of coloring particulate thermoplastic resins, consisting in the steps of:

mixing a particulate dye with a particulate wax which is solid at room temperature but liquefies at temperatures of about 35° C.;

heating a particulate thermoplastic resin to a temperature between about 35° C. and 160° C. at which it softens but remains in particulate state;

adding the mixture of particulate dye and particulate wax to the heated thermoplastic resin, so that the wax becomes liquefied due to the heated condition of the thermoplastic resin;

mixing the resulting composite so that the liquefied wax coats the resin particles and adheres dye to them; and

thereafter cooling the composite to below the liquefying point of the wax to obtain a pourable agglomerate.

4,271,212

METHOD OF COATING HOT GLASS CONTACTING SURFACES

Edward J. Stengle, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 21, 1979, Ser. No. 41,213

Int. Cl.³ B05D *5/08*

U.S. Cl. 427—203 **9 Claims**

1. The method of coating a metallic substrate for long-term use in handling hot glass charges or articles comprising the steps of thoroughly cleaning the metallic substrate, applying a primer coating of monomeric/polymeric first silicone resin to said substrate and air drying the same, applying a coating of solventless curable thermosetting second silicone resin binder over said primer coating, depositing at least one layer of granular heat-resistant solid lubricant carbonaceous material over said binder coating and allowing said binder to wet and embed said granular carbonaceous material to firmly retain the same, and heat-curing said binder into thermoset further-hardened condition to permanently affix said granular carbonaceous material to said substrate.

4,271,213

FUSED, THERMOPLASTIC PARTITIONING AGENT AND PREPARATION OF CRUMB RUBBER COATED THEREWITH

Donald C. Grimm, Tallmadge, and Hanford L. Gunnerson, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 675,402, Apr. 9, 1976, abandoned. This application Jan. 11, 1980, Ser. No. 111,153

Int. Cl.³ B44D *1/02*

U.S. Cl. 427—222 **16 Claims**

1. The process of producing an elastomeric crumb, coated with a fused resinous partitioning agent which adheres to the crumb without substantial cohesion of the coated particles to one another, which process comprises coating a tacky polymer crumb, the particles of which measure 1 to 50 mm. across, using a latex blend of 0.1 to 10 percent solids content which is a blend of (a) 50 to 80 parts by weight of a styrene-butadiene copolymer resin with a styrene content of substantially 80 to 99 percent and (b) 50 to 20 parts by weight of a polymethyl methacrylate resin, the weight of the resin blend being 1 to 25

percent of the weight of the elastomeric crumb, using sufficient of the latex blend at a temperature substantially as high as 85° C. to coat the crumb, adding the resin latex blend containing a coagulant to a slurry of the rubber particles in water at a temperature of 90°–95° C. to coagulate the blend, and drying the coated crumb at a final temperature of at least 85° C. and not more than 95° C. whereby the coating adheres to the crumb without substantial cohesion of the coated particles.

4,271,214

METHOD FOR RECOVERING ACRYLIC RESIN FROM EXCESS OF SPRAYED POWDER COATING COMPOSITION BY USING AROMATIC SOLVENTS

Katsuo Miki, Oomiya, and Kazutoshi Abe, Yokohama, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Aug. 29, 1979, Ser. No. 70,585
Claims priority, application Japan, Sep. 7, 1978, 53-109117
Int. Cl.³ B08B *3/08*
U.S. Cl. 427—345 **5 Claims**

1. A method for recovering an acrylic resin component from an excess of a sprayed powder coating composition containing acrylic resin, a pigment and a curing agent which is not deposited onto an article to be coated and is recovered in an apparatus for coating an article with a powder coating composition, comprising the steps of:

(a) treating the excess powder coating composition with an aromatic hydrocarbon solvent, whereby the acrylic resin component is dissolved in the solvent which has a solubility for the curing agent of not more than 0.1 g curing agent per 100 g of solvent;

(b) separating insoluble or non-dissolved components including the pigment and the curing agent from the resin solution obtained in step (a), and;

(c) removing the solvent from the resin solution to thereby recover the acrylic resin component.

4,271,215

METHOD FOR RELEASING FROZEN WATER

Delbert L. Coon, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 31, 1979, Ser. No. 89,438
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—387 **4 Claims**

1. A method for treating a water-impermeable surface to facilitate the release of frozen water therefrom, said method comprising applying to said water-impermeable surface a coating composition obtained by mixing components consisting essentially of

(A) 15 to 70 parts by weight of a carboxy-functional siloxane fluid having the formula

$$R'(CH_3)_2SiO\{(CH_3)_2SiO\}_x\{(CH_3)RSiO\}_ySi(CH_3)_2R'$$

wherein R denotes a carboxy-functional radical bonded to silicon by a silicon-carbon bond, R′ denotes a methyl radical or an R radical, x has an average value of from 25 to 400 and y has an average value of from 0 to 25, there being an average of at least two carboxy-functional radicals per molecule of said siloxane fluid,

(B) 0.1 to 5 parts by weight of a titanate having the formula $Ti(OR'')_4$ wherein each R″ is an aliphatic radical or a hydroxylated aliphatic radical having 1 to 12 carbon atoms and

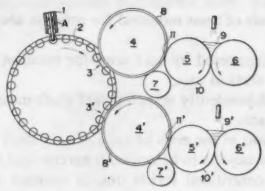
(C) 25 to 80 parts by weight of a volatile diluent, the total of (A)+(B)+(C) being 100 parts by weight and thereafter drying the applied coating composition.

4,271,216

METHOD FOR COATING A CYLINDRICAL CAN BODY

Hiromichi Shimizu, Sagamihara, Japan, assignor to Daiwa Can Company, Limited, Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,683
Claims priority, application Japan, Apr. 5, 1979, 54/41421
Int. Cl.³ B05D *1/28*
U.S. Cl. 427—428 **2 Claims**



1. A method of applying a given amount of white paint by rolls to all the outer surface of a cylindrical can body which is transported along a passageway as it is supported by a supporting element extending in a direction perpendicular to said passageway, wherein all the said outer surface of the cylindrical can body is brought into contact with a first rotating application roll being close to said passageway and carrying white paint, thereby transferring the white paint in a part of said given amount from said first application roll onto said outer surface of the can body to coat said surface, said coated outer surface of the can body then being brought into contact with a second rotating application roll carrying white paint, being close to said passageway and positioned downstream of the first application roll in the advancing direction of the can, thereby transferring the white paint in the rest of said given amount from said second application roll onto the coated outer surface of the can to coat said surface.

4,271,217

PROCESS FOR PRODUCING POLYURETHANE RESINS AND SHEET MATERIALS

Itsuya Tanaka, Kyoto, and Toshikazu Fujii, Neyagawa, both of Japan, assignors to Sanyo Chemical Industries, Ltd, Kyoto, Japan

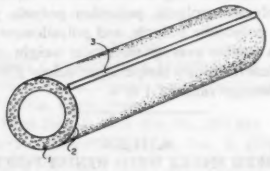
Filed Mar. 13, 1979, Ser. No. 20,057
Claims priority, application Japan, Mar. 31, 1978, 53/38640
Int. Cl.³ B32B *27/40;* D03D *27/00;* D04H *11/00;* D05C *17/00*
U.S. Cl. 428—96 **31 Claims**

16. A sheet material having improved physical properties and improved dyeabilities which comprises a layer formed by applying to a substrate a solution of a water-insoluble, water-nondispersable polyurethane resin having a quaternary nitrogen atom content of 0.05–0.23% by weight, obtained by reacting an organic diisocyanate (A) with active hydrogen atom-containing compounds comprising a macromolecular polyol (B) and a low-molecular weight polyfunctional compound (C), wherein (1) part of the active hydrogen atom-containing compounds is at least one quaternary nitrogen atom-containing polyol (D) selected from the group consisting of low-molecular weight polyols, polyether polyols and polyester polyols having at least one quaternary nitrogen atom, (2) 40–100 equivalent % of (C) is a low molecular weight polyfunctional compound (E) having no nitrogen atom other than the functional group, and (3) the equivalent ratio of NCO group of (A) to active hydrogen atom-containing group of the active hydrogen atom-containing compounds in total is 1:0.9–1.1, and immersing said substrate coated with said solution in a coagulating bath containing a liquid which is compatible with the solvent and is a non-solvent for the polyurethane resin.

4,271,218
PIPE INSULATING JACKET

Klaus Heckel, Weinheim; Friedemann Klaffke, Gorxheimertal-Unter-Flockenbach; Walter Umann, Weinheim, and Volker Schwarz, Hirschberg, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 16, 1979, Ser. No. 12,923
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2807036
Int. Cl.³ B32B 3/04; B29C 19/00
U.S. Cl. 428—36 9 Claims

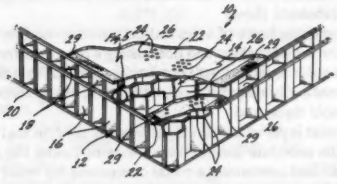


1. A pipe insulating jacket consisting of a hollow cylinder made of a soft closed cell foamed cross-linked polyolefin, and outer sleeve of aluminum foil with abutting edges parallel to the axis of the pipe, and a polyester further foil about 5 to 20μ thick on the outside of the aluminum foil, the aluminum foil carrying a thermoplastic coating on its inside, the coating being welded throughout to the surface of the soft foamed material and in proximity to the abutting edges being welded to itself along its upwardly bent edges.

4,271,219
METHOD OF MANUFACTURING AN ADHESIVE BONDED ACOUSTICAL ATTENUATION STRUCTURE AND THE RESULTING STRUCTURE

William D. Brown, Riverside, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Oct. 2, 1979, Ser. No. 81,267
Int. Cl.³ B32B 3/12
U.S. Cl. 428—116 6 Claims



1. A method of manufacturing adhesive bonded acoustical attenuation structure, the structural components comprising a first and second honeycomb cores with a multiplicity of endwise directed cells, an imperforate facing sheet, a first and second perforated sheets, a first and second thin sheets of porous fibrous material, and method comprising the steps of:

(a) cleaning and degreasing the components to be assembled into said acoustical attenuation structure;

(b) applying a solvent base first adhesive coating to one surface of each of said perforate sheets for bonding thereto one of said first and second thin sheets of porous fibrous material;

(c) removing the solvent from said solvent base first adhesive;

(d) stacking said first perforated sheet with said first thin sheet of porous fibrous material and said second perforated sheet with said second thin sheet of porous fibrous material, applying a positive pressure between the components of each stack and curing said first adhesive;

(e) applying a coating of a maskant material to the perforation exposed surface of the now combined perforate sheets and thin sheets of porous fibrous material;

(f) applying an anti-wetting solution to the fibers of the thin sheets of porous fibrous material and the adjacent attached surface of the perforate sheets;

(g) removing the coating of maskant of step (e);

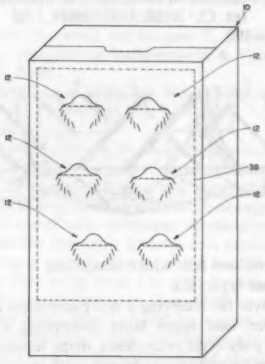
(h) applying a layer of a second adhesive between each core and its adjacent components; and

(i) stacking the various components in the following sequence, first said imperforate facing sheet, then said first honeycomb core, then the now combined first perforated sheet and first thin sheet of porous fibrous material with the perforated surface adjacent the open core of said first honeycomb core, said second honeycomb core positioned on said first thin sheet of porous fibrous material and then the combined second perforated sheet and second thin sheet of porous fibrous material with said second thin sheet of porous fibrous material as the outermost surface, applying a positive pressure between the outer components toward the center and curing the first and second adhesives.

4,271,220
LAMINATED STRUCTURE INCORPORATING EXPANDABLE POCKETS

Michael J. Otto, Kalamazoo, and George C. Ray, Battle Creek, both of Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 10, 1979, Ser. No. 74,196
Int. Cl.³ B32B 3/10, 7/06, 7/12
U.S. Cl. 428—134 15 Claims



1. A laminated structure of packaging material comprising an inner wall constituted of a relatively rigid material; an outer wall of relatively thin, generally pliant material; at least one perforation configuration comprising slits penetrating through said pliant outer wall material and arranged in a pattern defining at least one displaceable area constituting the outer wall panel of an object-receiving pocket intermediate said inner and outer walls; and a laminating adhesive interpsosed between said inner and outer walls for joining said walls to each other except in areas substantially coextensive with the area of said pocket to facilitate the insertion of an object into said pocket, said slits including a series thereof spaced apart in offset overlapping relation to one another along the peripheral edge of said panel and defining there-between a series of pliable strips interconnecting said panel with the surrounding area of said outer wall adhesively joined to said inner wall, said panel being displaceable outwardly from a flush to a spaced parallel relation with said inner wall by flexure of said strips in response to insertion of an object into said object-receiving pocket.

4,271,221
COATING COMPOSITION FOR DECORATIVE LAMINATES

William A. Hosmer, Cape Elizabeth, Me., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Aug. 1, 1979, Ser. No. 62,728
Int. Cl.[3] C08L 61/10, 61/28; B32B 23/12, 27/42
U.S. Cl. 428—172 14 Claims

1. An aqueous coating composition comprising a pigment, a pigment binder, and an uncoalesced dispersion of a urea-formaldehyde resin condensate or a melamine-formaldehyde resin condensate.

5. A decorative sheet suitable for saturation and consolidation with one or more other laminae to form a heat and pressure consolidated decorative laminate, the decorative sheet comprising a porous sheet material coated on at least one side with the coating composition of claim 1, the coating composition being dried and the resin condensate being in an uncoalesced, particulate state.

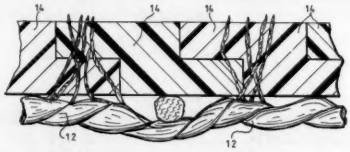
7. The decorative sheet according to claim 5, further including as an additional component in the coating composition a thermoplastic resin which has been dried without forming a film.

10. The decorative sheet according to claim 7, wherein the decorative sheet is embossed.

4,271,222
PAPERMAKERS FELT AND METHOD OF MANUFACTURE

Edward R. Hahn, Neenah, Wis., assignor to Albany International Corp., Albany, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,494
Int. Cl.[3] B32B 3/00; D04H 1/08
U.S. Cl. 428—193 7 Claims



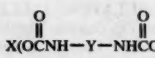
1. A papermakers felt, which comprises;
a textile base layer; and
an upper layer for receiving a wet paper sheet affixed to the base layer, said upper layer comprising a plurality of flexible, polymeric resin foam strips having side edges, said strips being laid side by side with abutting side edges and with the lengthwise direction of the strips fixed at an angle to the direction of both the machine direction and the cross-machine direction yarns in the base layer.

4,271,223
PLASTIC FILM LABEL STOCK

Richard J. Lambert, Eau Galle Township, St. Croix County, Wis., and John A. Martens, Lino Lakes Township, Anoka County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 957,238, Nov. 2, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 81,177
Int. Cl.[3] B32B 3/00; C08F 2/46
U.S. Cl. 428—207 17 Claims

1. Label stock comprising a flexible plastic film backing and a thin adhesive layer, said plastic film backing having a thickness of 25–150 micrometers and comprising a polymer of the urethane oligomer

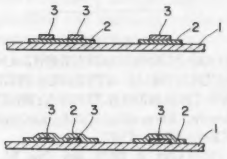


wherein
Z is an end-capping addition-polymerizable moiety comprising acrylyl methacrylyl, allyl or vic-epoxy groups,
Y is the divalent residue of an organic diisocyanate, Y(NCO)$_2$, Y being an alkylene group with 4 to 13 carbon atoms, a cycloalkylene group or an arylene group,
X is the residue of oligomeric alcohol, X(OH)$_n$, selected from polyester polyols, polyether polyols, polyacrylate polyols, polyolefin polyols, and polysiloxane polyols and having a number average molecular weight of 500 to 5000 and a glass transition temperature below 250° K., and
n has an average value of 1 to 4.

4,271,224
TRANSFER SHEET WITH RESIST PORTIONS

Shogo Mizuno, Toride; Takao Suzuki, Kawagoe; Sadanobu Kawasaki, and Hideichiro Takeda, both of Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 864,486, Dec. 27, 1977, abandoned. This application Feb. 1, 1980, Ser. No. 117,798
Claims priority, application Japan, Dec. 26, 1976, 51-158772
Int. Cl.[3] B32B 7/00; D06P 5/00
U.S. Cl. 428—207 35 Claims



1. A transfer sheet of laminated construction comprising:
(1) a substrate sheet;
(2) a coloring layer of a desired pattern disposed on one side of the substate sheet and containing a heat transferable dye as a coloring agent, said dye being selected from the group consisting of disperse dyes, basic dyes, acidic dyes, and oil soluble dyes; and
(3) a resist layer of a desired pattern disposed on said one side of the substrate sheet, either above or below the coloring layer, and containing a metal compound for resist printing by chemical action and a binder, wherein the metal compound for resist printing is a compound consisting of one metal selected from chromium, iron, copper, nickel, and cobalt combined with one radical selected from the radicals of hydrochloric acid, nitric acid, acetic acid, formic acid, and oxalic acid, the metal compound for resist printing being capable of causing the coloring agent to lose its heat transferability.

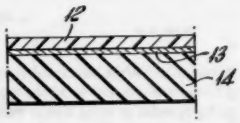
4,271,225
PLOW PROTECTIVE MEMBER

Thomas M. Camilleri, 277 Ave. W, Brooklyn, N.Y. 11223

Filed Dec. 13, 1978, Ser. No. 968,754
Int. Cl.[3] A63D 9/00; B32B 27/34, 25/00
U.S. Cl. 428—215 8 Claims

1. A protective member for the metal plow of an automatic pinspotter bowling machine which comprises a laminate formed of a pin contacting outer layer of wear-resistant, low coefficient of friction material, an intermediate layer of high tensile strength reinforcing material and an inner layer of

cushioning material not penetrating the intermediate layer to contact the outer layer, the protective member conforming to



the shape of the plow and adapted to be permanently affixed thereto.

4,271,226

INSULATING LAYERS FOR ELECTRICAL CABLES

Alain M. Herbreteau, Pau, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Dec. 5, 1977, Ser. No. 857,841

Claims priority, application France, Dec. 3, 1976, 76 36451; Jan. 25, 1977, 77 02037

Int. Cl.[3] **D03D** *13/00;* **H01B** *13/06*

U.S. Cl. 428—220 **4 Claims**

1. An electrical conductor having thereon a synthetic non-impregnated insulating structure consisting essentially of a tape comprising a biaxially oriented film of a thickness of less than 200 microns, a tensile resistance of higher than 5 DAN/mm^2, and comprising an isotactic stereo-regular olefin polymer of a weight average molecular weight of between 200,000 and 700,000, and a crystallinity between 40% and 90%, said tape having been subjected to a flat biaxial orientation at a stretching ratio between 3 and 7, said tape when wound on an electrical conductor under a tension not less than 0.4 DAN/mm^2 clinging to itself and providing an insulating structure of a coherent, self-cohesive nature, said insulating structure being in the form of a plurality of layers of said tape on top of each other in intimate non-sliding contact with each other, each of said layers being a length of said tape wound so as to at least partially overlap an underlying wrap of said length of tape, each of said layers comprising a plurality of said at least partially overlapping wraps.

4,271,227

TRANSPARENT FIBROUS SHEETS AND PROCESS FOR MAKING

Peter Muller, and Henry Mustacchi, both of Port Washington, N.Y., assignors to Andrews Paper & Chemical Co., Inc., Port Washington, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,801

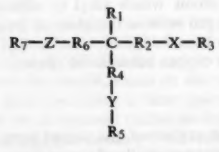
Int. Cl.[3] **B32B** *23/10, 27/10;* **D21B** *3/00*

U.S. Cl. 428—264 **20 Claims**

1. The method of transparentizing fibrous cellulosic sheets, which comprises:

providing a sheet of fibrous cellulosic material for transparentizing and which comprises a plurality of discrete cellulosic fibers which are disposed so that at least a portion of said fibers are bonded together at cross-over points, forming voids between the fibers at non-crossover points;

applying to a surface of the sheet a monomer of the formula:



wherein R_1 is selected from the group consisting of hydrogen, alkyl, aralkyl, hydroxyalkyl and carboxyl; R_2, R_4 and R_6 each represent alkylene; R_3, R_5 and R_7 each represent a monovalent moiety selected from those of the formula: —CH=CH$_2$,

and —CH=CH—R_8 wherein R_8 is selected from the group consisting of alkyl and phenyl; and X, Y and Z each represent a divalent moiety of the formula:

wherein B is selected from oxygen and a group of the formula —NH—;

in admixture with a thermoploymerization catalyst;

evenly distributing the applied mixture of monomer and catalyst so as to fill voids in the sheet with the mixture of monomer and catalyst by wet-packing the applied to sheet in a roll under tension for a period of time sufficient to achieve said distributing; and

thermally polymerizing the monomer in the voids by heating the wet-packed roll to a temperature sufficient to activate the catalyst and dissipating excessive heat of polymerization into the environment of fibrous material to prevent spontaneous polymerization from overheating.

19. The product of the process of claim 1.

4,271,228

SHEET MATERIAL CONTAINING EXFOLIATED VERMICULITE

Richard P. Foster, Norwood, and Gregory C. Brodin, Foxboro, both of Mass., assignors to Hollingsworth & Vose Company, East Walpole, Mass.

Filed Feb. 4, 1980, Ser. No. 117,986

Int. Cl.[3] **D04D** *1/08;* **B32B** *5/02*

U.S. Cl. 428—281 **5 Claims**

1. A sheet material adapted for use as heat resistant gaskets, heat insulation, electrical insulation, and supporting media for dehumidifiers and heat exchangers, said material being in the form of a fibrous web comprising organic fiber, organic binder, and a blend of completely exfoliated vermiculite free from asphalt with another inorganic asbestos-free particulate filler, said blend having a particle size to pass a No. 80 screen, the amount of said fiber being from 1 to 30% by weight and the amount of said blend being from 70 to 99% by weight, the amount of binder being from 3 to 30% by weight, all based on the total weight of fiber and blend, and the amount of vermiculite being from 25 to 70% by weight of said blend, said sheet material having a density of 0.64 to 1.92 g per cc, a tensile strength of at least 500 psi, a compression of 7 to 50% and a recovery of 20 to 70% at 1000 psi, a scalability of 30 cc/hr maximum at 500 psi, and a stress relaxation of 50% maximum at 212° F.

4,271,229

SIZING COMPOSITION TO YIELD SIZED GLASS FIBERS WITH IMPROVED UV STABILITY

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 4, 1979, Ser. No. 72,392

Int. Cl.[3] **D04H** *1/58*

U.S. Cl. 428—288 **24 Claims**

1. A sizing composition for glass fibers to produce sized glass fibers having improved UV stability, comprising:

(a) one or more thermoplastic, predominantly aliphatic, elastomeric, curable polyurethane polymers,

(b) one or more ureidofunctional silanes, and

(c) one or more aminofunctional silanes.

4,271,230

FOAMED URETHANE COMPOSITE

Hajime Sakano, Hirakata; Fumio Nakai, Shiga, and Yukio Tomari, Toyonaka, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Japan

Filed Aug. 17, 1979, Ser. No. 67,631
Claims priority, application Japan, Aug. 17, 1978, 53-100717; Aug. 17, 1978, 53-100718
Int. Cl.[3] B32B *5/18*
U.S. Cl. 428—315 3 Claims

1. A foamed urethane composite which is prepared by
(1) coating a covering material with
(A) an organic solvent solution or aqueous emulsion comprising
(A-1) at least one member selected from the group consisting of flexible urethane resins, starting materials for the preparation of flexible urethane resins, and vinyl chloride resins, and then with
(B) an organic solvent solution comprising
(B-1) a copolymer of one or more carboxyl group containing ethylenically unsaturated monomers and one or more monomers selected from the group consisting of acrylic and methacrylic esters and
(B-2) at least one member selected from the group consisting of blocked isocyanate compounds, poly-N-alkoxymethylmalamine compounds, polyepoxy compounds, polyoxazoline compounds, polydihydrooxazine compounds and reactive polyamide compounds,
(2) subjecting the coated covering material to crosslinking under heating, and
(3) contacting the coated covering material with a foamed urethane compound.

4,271,231

PROCESS FOR SECURING BULK LOADS IN MOTOR COASTERS AND OCEAN-GOING VESSELS AGAINST SHIFTING

Guenter Hansen, Frankenthal; Hermann Pottgiesser, and Walter Schlindwein, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,217
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842714
Int. Cl.[3] B32B *5/16;* C09J *5/00*
U.S. Cl. 428—323 17 Claims

1. A process for securing particulate bulk loads in motor coasters and ocean-going vessels against shifting as a result of list or pitching, which comprises:
bonding the surface layer of particles of the trimmed bulk load by uniformly applying thereto an aqueous solution or dispersion of a polymeric binder and drying to form a consolidated surface layer.

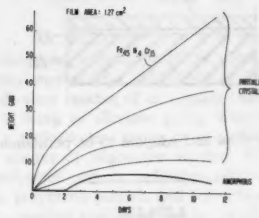
4,271,232

AMORPHOUS MAGNETIC FILM

Neil D. Heiman, Morgan Hill; Robert L. White, Los Altos Hills; Robert I. Potter, and Paul A. Albert, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,686
Int. Cl.[3] H01F *10/07*
U.S. Cl. 428—332 7 Claims

1. A thin film magnetic material for use as magnetic recording media comprising an amorphous iron-nitride film having a coercivity of at least about 200 oersteds and high corrosion resistance and wherein the atomic percent of of Fe in said material is from about 70 to >40% and the atomic percent of N in said material is from about 30 to <60%, said atomic



percent being based upon the total atoms of Fe and N in the material.

4,271,233

CRIMPED POLYAMIDE FILAMENT

LeMoyne W. Plischke, and William M. Baggett, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 2, 1979, Ser. No. 90,824
Int. Cl.[3] D02G *3/00*
U.S. Cl. 428—370 4 Claims

1. A melt spun crimped side-by-side bicomponent filament consisting essentially of a polyamide and CaF_2 and having a crimp level of at least 5 crimps per inch, wherein said CaF_2 is uniformly dispersed in one of the components at a concentration of at least 200 parts per million by weight of said one component and the weight ratio of the CaF_2-containing component to the other component is between 5:95 and 70:30.

4,271,234

IRON OXIDE MAGNETIC PIGMENTS FOR THE PRODUCTION OF MAGNETIC COATINGS

Eduard Schönafinger, Ludwigshafen; Paul Deigner, Weisenheim; Manfred Ohlinger, Frankenthal; Helmut Jakusch, Ludwigshafen; Jürgen Amort, Troisdorf-Sieglar; Heinz Nestler, Troisdorf-Eschmar; Claus-Dietrich Seiler, Rheinfelden, and Otto Ambros, Mannheim, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 848,437, Nov. 3, 1977, Pat. No. 4,169,912, which is a continuation of Ser. No. 729,445, Oct. 4, 1976, abandoned. This application Jan. 31, 1979, Ser. No. 8,146
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1975, 2543962
The portion of the term of this patent subsequent to Nov. 2, 1996, has been disclaimed.
Int. Cl.[3] B32B *5/16, 9/04*
U.S. Cl. 428—405 23 Claims

1. An iron oxide pigment having a coating of a silane of the formulla

$$R_nSi(OR')_{4-n}$$

wherein
R is a straight line or branched alkyl group having 1 to 18 carbon atoms or a straight or branched alkenyl group of 2 to 18 carbon atoms which alkyl or alkenyl group can contain an oxygen atom in the chain or an aryl group
R′ is a straight or branched chain C_1–C_{18} alkyl group which can contain an oxygen atom in the chain

n=1 to 3

or a hydrolysis product thereof, the coated pigment produced by a process consisting essentially of suspending said iron oxide pigment in a composition consisting essentially of an organic or aqueous medium which medium contains a C_1–C_4 alcohol, a

ketone or a chlorinated hydrocarbon, said medium also containing a silane of the formula

$$R_nSi(OR')_{4-n}$$

wherein

R is a straight or branched alkyl group having 1 to 18 carbon atoms or a straight or branched alkenyl group of 2 to 18 carbon atoms which alkyl or alkenyl group can contain an oxygen atom in the chain or an aryl group

R' is a straight or branched chain C_1–C_{18} alkyl group which can contain an oxygen atom in the chain

n=1 to 3

or its hydrolysis product, until at least a portion of the surface of said iron pigment is coated with said silane or its hydrolysis product, and thereafter drying the so-treated iron oxide pigment at 50°–200° C.

4,271,235

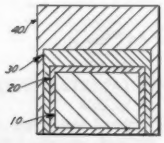
METHOD OF OBTAINING POLYCRYSTALLINE SILICON AND WORKPIECE USEFUL THEREIN

Lawrence Hill, 33 Wellington Ave., Short Hills, N.J. 07078; Dennis Garbis, 31 Bonaire Dr., Dix Hills, Long Island, N.Y. 11746, and Robert Heller, 5 Silversmith La., Levittown, Long Island, both of N.Y. 11756

Division of Ser. No. 37,864, May 10, 1979. This application Dec. 26, 1979, Ser. No. 106,767

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—408 **8 Claims**



1. A workpiece useful in the chemical vapor deposition of polycrystalline silicon comprising:

(A) a solid substrate body having a substantially planar upper face and a sidewall;

(B) a base coating disposed over at least said substrate body face, said base coating being selected from the group consisting of oxide, nitride and oxynitride compositions, and

(C) a substantially pinhole-free and scratch-free layer of carbon disposed over at least the face of said base coating and adapted to receive polycrystalline silicon thereon.

4,271,236

AIR FIREABLE END TERMINATION COMPOSITIONS FOR MULTILAYER CAPACITORS BASED ON NICKEL BORIDES

Alfred A. D'Addieco, Grand Island, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1979, Ser. No. 88,842

Int. Cl.³ B32B *15/02*; H01B *1/02, 1/06*

U.S. Cl. 428—426 **12 Claims**

10. A thick film air fireable conductive composition consisting essentially of:

(A) 80–95 parts by weight, based on the weight of (A) plus (B), of Ni_3B; and containing 0–80 parts by weight, based on the weight of (A) of nickel metal;

(B) 20–5 parts by weight, based on the weight of (A) plus (B), of a glass containing at least approximately 90% by weight of the component oxides having reduction potentials less than approximately −0.5 volt, the glass having softening point below approximately 600° C.; and

(C) an organic vehicle wherein the ratio of (A) plus (B) to the vehicle is in the range of 19:1 to 1:9 by weight.

4,271,237

ACRYLATE-ACETOACETAMIDE POLYMERS

John S. Heckles, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 916,967, Jun. 19, 1978. This application Aug. 9, 1979, Ser. No. 65,139

Int. Cl.³ B32B *27/08*

U.S. Cl. 428—520 **8 Claims**

1. A thermoplastic floor covering coated with a wear layer composition, said composition comprising a crosslinked acrylate-acetoacetamide polymer produced by the reaction of at least one polyfunctional acrylate with at least one diacetoacetamide in the presence of a catalyst capable of promoting the reaction between the polyfunctional acrylate and the diacetoacetamide.

4,271,238

STRUCTURAL MEMBERS FOR INSULATED VEHICLE BODIES

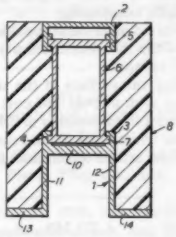
Albert A. Braithwaite, Blofield, and Tony S. Smith, Neatishead, both of England, assignors to Freigh Bonallack Limited, Norfolk, England

Filed Nov. 13, 1978, Ser. No. 960,245

Claims priority, application United Kingdom, Nov. 21, 1977, 48464/77

Int. Cl.³ B62D *25/02, 33/04*

U.S. Cl. 428—542 **7 Claims**



1. A structural load bearing member for use in constructing an insulated body for a commercial vehicle, said member comprising:

an elongate inner metallic frame element having a first pair of laterally open grooves which face inwardly towards one another;

an elongate outer metallic frame element having a second pair of laterally open grooves which face inwardly towards one another;

a plurality of rigid synthetic plastic spacer elements extending between the inner and outer frame elements in load bearing relation therewith, each spacer element having a box-shaped transverse cross-section and being provided with a first pair of ribs engaging in a mechanical interfit relation with the first pair of laterally open grooves and a second pair of ribs engaging in a mechanical interfit relation with the second pair of laterally open grooves, the spacing of the ribs of each said pair of ribs being rigidly fixed by a respective wall of said box section; and a mass of in situ cured rigid load bearing foam completely embedding each spacer element therewithin and bonded to the frame elements in load bearing relation therewith.

4,271,239
SINTERED METAL ARTICLES AND PROCESS FOR THEIR MANUFACTURE

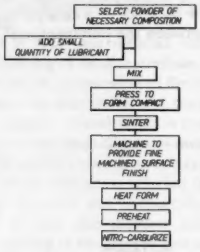
Percival E. Warner, Coventry; Paul Smith, Birmingham, and Terence M. Cadle, Coventry, all of England, assignors to Brico Engineering Limited, Coventry, Great Britain

Filed Jul. 19, 1978, Ser. No. 926,037

Claims priority, application United Kingdom, Jul. 20, 1977, 30360/77

Int. Cl.³ B22F *3/24*

U.S. Cl. 428—547 **11 Claims**



1. An iron-based sintered metal article for use in products requiring wear resistance and good tensile strength and which has been pressed so that after compacting it has a density which is at least 88.5% of the theoretical density, has a fine machined surface finish comprising turning with at least 360 cuts per inch, and has a nitrocarburized surface or white layer which is not found at a depth exceeding about 250 microns from the surface of the article.

7. A process for the manufacture of an iron-based sintered metal article for use in products requiring wear-resistance and good tensile strength, comprising:

(a) pressing an iron-based metal powder to a density of at least 88.5% of the theoretical density to form a compact;

(b) sintering the compact;

(c) fine machining the surface of the sintered article, comprising turning with at least 360 cuts per inch; and

(d) nitrocarburizing the machined article to provide a hardened surface or white layer on said surface at a depth from the surface of the article which does not exceed about 250 microns.

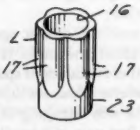
4,271,240
LOBED PREPARATORY BLANK FOR COLD EXTRUDING A CUP-SHAPED ARTICLE WITH HOLLOW POLYGONAL INTERIOR

Frederick W. Braun, Bloomfield Hills, Mich., assignor to Braun Engineering Company, Detroit, Mich.

Division of Ser. No. 864,544, Dec. 27, 1977, Pat. No. 4,166,373. This application Feb. 2, 1979, Ser. No. 9,263

Int. Cl.³ B21C *1/00*; B32B *9/04*

U.S. Cl. 428—580 **4 Claims**



1. As an article of manufacture, an externally lobed preparatory blank useful for subsequent extrusion into an elongated, cup-shaped final product having a hollow end portion having a cylindrical outer surface and a polygonal interior surface and an opposite solid end portion having a cylindrical outer surface of smaller diameter than the cylindrical surface at the hollow end thereof, said cup-shaped blank having at one end a thin walled hollow end portion provided with a smooth cylindrical inner surface truly circular in inner cross-section and extending for the complete 360° inner circumference, the outer surface of said hollow end portion being made up of a plurality of convexly curved longitudinally extending lobes circumferentially spaced about the axis of said blank corresponding in number and circumferential arrangement to the flat sides of a desired polygonal interior surface of said final extruded product, the other end of said preparatory blank being a solid closed end having a cylindrical exterior surface.

4,271,241
RESEALABLE VENT VALVE FOR CONTAINERS SUCH AS BATTERIES

John W. Hooke, Gainesville, and Paul E. Pate, Branford, both of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Feb. 5, 1980, Ser. No. 118,767

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—54 **10 Claims**

1. A resealable pressure relief valve capable of relieving the excessive build-up of internal pressure within the closed container of an energy cell by venting gas from within the container to the atmosphere and resealing the container after venting, said valve comprising:

an outer rigid plate;

an inner flexible disc forming part of the interior of the container which contains one or more vent holes;

a compressible rubber gasket positioned in partially compressed condition between the outer rigid plate and the inner flexible disc and situated over each of said vent holes;

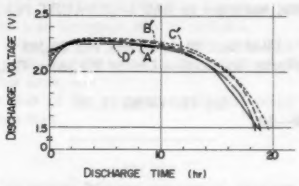
wherein said outer plate is bound to the inner disc by means passing through an open area of the gasket interconnecting the upper surface of the inner disc and the lower surface of the outer plate; and wherein said valve is capable of venting gas when the internal pressure of the container exceeds a predetermined limit which excessive pressure causes the inner disc to flex upward yielding a non-uniform gap between the surfaces of the inner disc and outer plate transmitting a non-uniform compression to the rubber gasket including reduced compression of the gasket in the area of said vent holes causing the gasket to break its seal over the vent holes providing a vent path for the venting of gas from the container.

4,271,242

ACTIVE MATERIAL FOR POSITIVE ELECTRODE OF BATTERY

Yoshinori Toyoguchi, Osaka; Takashi Iijima, Hirakata, and Masataro Fukuda, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 916,528, Jun. 19, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,475
Claims priority, application Japan, Jun. 24, 1977, 52-75763
Int. Cl.³ H01M 6/14
U.S. Cl. 429—194 1 Claim



1. In a battery having a nonaqueous electrolyte, a fluorinated carbon cathode and a lithium anode, the improvement which comprises using as the cathode a carbon fluoride produced by fluorinating carbon having a lattice constant of 3.40 to 3.50 Å in its (002) planes.

4,271,243

POSITIVE ACTIVE MATERIAL FOR AN ELECTRICAL CELL

Michel Broussely, and Sylvie Baudry, both of Poitiers, France, assignors to Saft Leclanche, Poitiers, France

Filed Feb. 1, 1980, Ser. No. 117,793
Claims priority, application France, Feb. 14, 1979, 79 03773; Jan. 16, 1980, 80 00898
Int. Cl.³ H01M 4/62
U.S. Cl. 429—194 9 Claims

1. An electric cell having a negative electrode, a positive electrode, and a non-aqueous electrolyte which is liquid at ordinary temperatures and pressures, said positive electrode comprising an active material consisting of a vitreous composition of a small quantity of silica and at least one electrochemically reducible metal oxide.

4,271,244

HIGH SPECIFIC ENERGY BATTERY HAVING AN IMPROVED POSITIVE ACTIVE MATERIAL

Jean-Paul Gabano, and Michel Broussely, both of Poitiers, France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Continuation of Ser. No. 942,292, Sep. 14, 1978, abandoned. This application Oct. 25, 1979, Ser. No. 87,926
Int. Cl.³ H01M 6/16
U.S. Cl. 429—197 8 Claims

1. A battery having a negative electrode composed of lithium, an electrolyte solution of which the solvent is an aprotic composition, and a positive electrode including a positive active material composed of an oxide of lead having the formula PbO_x, wherein the improvement comprises said positive active material being composed of uniformly homogeneous particles of an oxide of lead wherein x is within the range of 1.5 to 1.87.

4,271,245

GRID BASE PLATE FOR AN ELECTRODE PLATE FOR A STORAGE BATTERY AND METHOD OF MANUFACTURE THEREOF

Yuichi Suzuki, and Ichiro Sano, both of Yokohama, Japan, assignors to Furukawa Denchi Kabushiki Kaisha and Furukawa Denki Kogyo Kabushiki Kaisha, both of Yokohama, Japan

Filed Mar. 13, 1980, Ser. No. 129,837
Claims priority, application Japan, Aug. 17, 1979, 54-104042
Int. Cl.³ H01M 4/74
U.S. Cl. 429—243 5 Claims

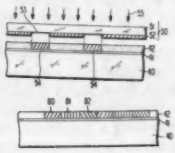
1. A grid base plate for an electrode plate for a storage battery comprising a sheet of material formed with a grid region having a plurality of openings and a peripheral frame region surrounding said grid region, said peripheral frame region being upwardly bent to form an upwardly projecting portion defining, with said grid region, a space filled with an active material of a thickness determined by the height of the upwardly projecting portion of said peripheral frame, said upwardly projecting portion having an outer bend region with an edge surface constituting a peripheral edge of said frame, said upwardly projecting portion having an inner region joined to said grid region, said inner region having a lower surface in the vicinity of the juncture of said inner region and said grid region, said edge surface facing laterally outwards, said outer bend region having a lower surface disposed in the same horizontal plane as said lower surface of said inner region whereby when the base plate is placed on a horizontal planar surface, the peripheral frame region will rest on said horizontal surface along two lines of contact respectively at the bottom of said edge surface and at the lower surface of said inner region.

4,271,246

METHOD FOR PRODUCING A MULTICOLOR OPTICAL FILTER

Masamichi Sato, and Kenji Matsumoto, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 28, 1979, Ser. No. 52,704
Claims priority, application Japan, Jun. 28, 1978, 53-78313
Int. Cl.³ G03C 5/04, 5/00, 7/00
U.S. Cl. 430—7 20 Claims



1. A method of producing a multicolor optical filter, which comprises exposing a photographic material comprising a support and one black-and-white silver halide emulsion layer to light through a first pattern; developing the exposed emulsion layer with a first coupler-containing color developer to form a pattern of a first dye; then exposing an unexposed portion of said emulsion layer to light through a second pattern; developing the exposed area with a second coupler-containing color developer to form a pattern of a second dye; optionally repeating exposure and development to form patterns containing dyes of third and subsequent colors, thereby

to form color patterns of at least two colors; and subjecting the product to a silver removal treatment after the final color development step.

4,271,247

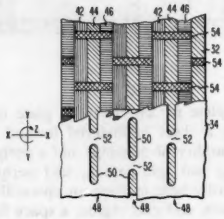
COLOR PICTURE TUBE WITH SCREEN HAVING LIGHT ABSORBING AREAS

Albert M. Morrell, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 912, Jan. 2, 1979, abandoned. This application Aug. 7, 1980, Ser. No. 176,250

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—24 **9 Claims**



1. In a photo method of making light absorbing areas of a color picture tube screen wherein the tube includes a cathodoluminescent line screen and a slit aperture mask wherein the slits are arranged in columns and the slits in each column are separated by web portions of the mask, the improvement comprising

photoexposing a photosensitive material on a faceplate of a tube utilizing the mask as a photomaster, with light projected from at least two separated points, a straight line connecting the points being perpendicular to the longitudinal dimension of the slits in the mask whereby the said screen is provided with said light absorbing areas consisting of patches in alignment with the said web portions of the mask.

4,271,248

MAGNETIC LATENT IMAGE TONER MATERIAL AND PROCESS FOR ITS USE IN FLASH FUSING DEVELOPING

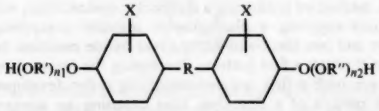
Stephen L. Gaudioso, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1980, Ser. No. 115,973

Int. Cl.³ G03G *11/00, 13/20*

U.S. Cl. 430—39 **20 Claims**

1. A method for developing magnetic latent images which comprises forming a magnetic latent image on a suitable substrate, contacting the image with a magnetic toner, transferring the image to a suitable substrate, followed by flash fusing the magnetic toner to said substrate, the toner particles having a pile height that ranges from about 3 microns to about 30 microns, the magnetic toner being comprised of a magnetic material and a resin comprising a polymeric esterification product of a dicarboxylic acid and a diol comprising a diphenol of the following formula:



wherein R is selected from the group consisting of alkylene radicals having from 2 to 12 carbon atoms, alkylidene radicals having from 1 to 12 carbon atoms and cycloalkylidene radicals having from 3 to 12 carbon atoms; R′ and R″ are selected from the group consisting of alkylene radicals having from 2 to 12 carbon atoms and alkylene arylene radicals having from 8 to 12 carbon atoms; X and X′ are selected from the group consisting of hydrogen and alkyl radicals having from 1 to 4 carbon atoms; and n_1 and n_2 are each at least 1 and the average sum of n_1 and n_2 is less than 21.

4,271,249

COMPOSITION OF MATTER AND METHOD FOR ELECTROSTATIC IMAGE DEVELOPMENT

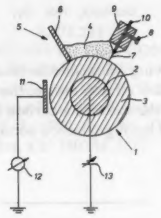
Yvan K. Gilliams, Hever, and Pierre R. De Roo, Schoten, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Oct. 30, 1979, Ser. No. 89,385

Claims priority, application United Kingdom, Oct. 31, 1978, 42515/78

Int. Cl.³ G03G *13/08*

U.S. Cl. 430—101 **8 Claims**



1. In a method for developing an electrostatic charge pattern of positive charge sign which comprises the steps of:

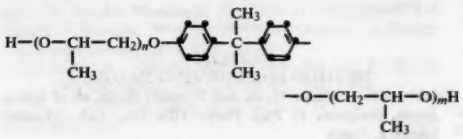
(a) imparting a positive electrostatic charge pattern to an electrically insulating medium,

(b) providing powder particles,

(c) forcing said powder particles by friction through a gap defined by a contacting means and a moving applicator means which carries on its surface the powder particles passing through the gap in layer form into at least close proximity with said charge pattern, wherein the applicator means has at least its surface contacting the powder particles composed of a silicone rubber, a polyurethane, a polyamide resin or a polyamide resin cross-linked with a compound containing epoxy groups and the contacting means having at least the surface containing the powder particles composed of a polyester resin, a polyurethane or a polyamide resin cross-linked with a compound containing epoxy groups, the surface of said applicator means having a Shore A hardness below 90 and being substantially smaller than the Shore A hardness of the powder particles, and

(d) delivering the powder particles present in layer form on the applicator surface into at least close proximity with said charge pattern to allow at least part of the powder particles to be electrostatically attracted onto the area of the electrostatically insulating medium carrying the positive charge pattern, the improvement wherein said powder particles have a Shore A hardness higher than 90 and contain, in addition to a colouring substance, in excess of 80% of their weight a mixture consisting of the following substances (1) and (2), or (1) and (3) or (1), (2) and (3), with substance (1) being present in said mixture in a weight ratio of at least 30%, wherein:

(1) is a polyester resin derived from fumaric acid or a mixture of fumaric acid and isophthalic acid wherein the fumaric acid represents at least 95 mole % of the acids, and a polyol blend of propoxylated bisphenol characterized by the formula:



wherein m and n are integers with the proviso that the average sum of m and n is from 2 to 7, said polyester resin being obtained from amounts of acid to polyol such that the ratio of carboxyl groups to hydroxyl groups is in the range of 1.2:1 to 0.8:1,

(2) is a copolymer of ethylene, maleic acid and/or maleic anhydride containing 50 to 70 mol % of ethylene repeating units, and

(3) is a wax of the group consisting of castor wax and montan wax.

4,271,250

FIBROUS ELECTROPHOTOGRAPHIC SHEET WITH A CELLULOSE NITRATE COATING

Colin H. Lewinton, Montreal, Canada, and Joseph Savit, Glencoe, Ill., assignors to Domtar Inc., Montreal, Canada

Division of Ser. No. 7,493, Jan. 29, 1979, abandoned. This application Nov. 23, 1979, Ser. No. 96,943

Int. Cl.³ G03G *5/00, 5/08*

U.S. Cl. 430—127 **1 Claim**

1. Process for the preparation of electrophotographic sheet material which comprises: coating a fibrous base material with a solution of cellulose nitrate, removing solvent from said solution on said base material so as to form a continuous film consisting of cellulose nitrate, coating a layer of photoconductive material on said film of cellulose nitrate; said film of cellulose nitrate comprising between $\frac{1}{2}$ and 6 lb. per ream (3,300 sq.ft) of said sheet material and said photoconductive material comprises zinc oxide.

4,271,251

PHOTOSENSITIVE COMPOSITIONS

Yoshimasa Aotani; Hiroshi Misu, both of Minami-ashigara, and Akira Nagashima, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 19, 1979, Ser. No. 86,622

Claims priority, application Japan, Oct. 19, 1978, 53-128886

Int. Cl.³ G03C *1/52, 1/68*

U.S. Cl. 430—195 **21 Claims**

1. In a photosensitive composition comprising a leuco dye and a photooxidizing agent forming an oxidizing agent capable of oxidizing the leuco dye upon exposure of said composition to radiation, the improvement wherein the composition additionally contains 2,4-dihydroxybenzaldoxime in an amount sufficient to restrain the occurrence of a dark heat reaction during storage of said composition.

4,271,252

METHOD OF STABILIZING ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES TO LIGHT AND A PHOTOGRAPHIC MATERIAL SO STABILIZED

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

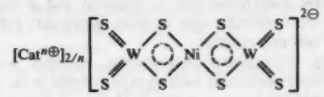
Division of Ser. No. 969,519, Dec. 14, 1978. This application May 15, 1980, Ser. No. 150,120

Claims priority, application Japan, Dec. 14, 1977, 52-150346

Int. Cl.³ G03C *1/40, 1/84, 1/10*

U.S. Cl. 430—216 **2 Claims**

1. A diffusion transfer color photographic material comprising a photosensitive element and an image-receiving element, said image-receiving element comprising a support having thereon a mordanting layer containing a complex of the formula (I)



(I)

wherein Cat represents a divalent cation when n is 2 or a monovalent cation when n is 1.

4,271,253

METHOD FOR STABILIZING ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES TO LIGHT AND PHOTOGRAPHIC MATERIAL SO STABILIZED

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

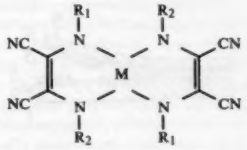
Division of Ser. No. 969,518, Dec. 14, 1978. This application May 15, 1980, Ser. No. 150,028

Claims priority, application Japan, Dec. 14, 1977, 52-150344

Int. Cl.³ G03C *1/10, 1/40, 1/84*

U.S. Cl. 430—216 **2 Claims**

1. A diffusion transfer color photographic material comprising a photosensitive element and an image receiving element said image receiving element comprising a support having thereon a mordanting layer containing a complex of the formula I



(I)

wherein M represents Ni, Pd or Pt; R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylsulfonyl group, an arylsulfonyl group or a carbamoyl group.

4,271,254

PROCESS FOR PRODUCING PHOTOGRAPHIC IMAGES

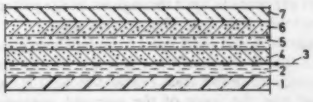
Leslie F. A. Mason, Brentwood; Robert S. Cook; David Kilcast, both of Billericay, all of England; Matthias Schellenberg, and Christoph Chylewski, both of Marly, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 954,251, Oct. 24, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,314

Claims priority, application Switzerland, Oct. 28, 1977, 13144/77; United Kingdom, Oct. 28, 1977, 44884/77; Nov. 18, 1977, 40811/77

Int. Cl.³ G03C *7/00, 5/54, 1/40, 1/10*

U.S. Cl. 430—239 **42 Claims**



1. Process for the production of photographic images which comprises the steps of:

(a) imagewise exposing a photographic assembly which

contains at least during the silver halide developing step, in order optionally a supercoat layer, at least one silver halide emulsion layer, a layer containing a preformed substantive bleachable dye or pigment and a support, there being optionally one or more interlayers between each of said components,

(b) treating the exposed photographic assembly with an aqueous acid processing bath so as to provide in the silver halide emulsion layer or layers a solution or dispersion of a bleach developer compound which is either a reduced silver dye bleach catalyst which is an azine compound or is a salt of a metallic ion or a complex of a metallic ion with a suitable ligand which is capable of acting as a silver halide developing agent, thereby to develop the latent silver image in the silver halide emulsion(s), and

(c) in the non-latent image areas allowing the bleach developer compound to diffuse in a counter-imagewise manner from the silver halide emulsion layer(s) to the layer containing the bleachable dye and there to bleach the bleachable dye or pigment to form a photographic image.

4,271,255

METHOD FOR THE PREPARATION OF PLANOGRAPHIC PRINTING PLATES

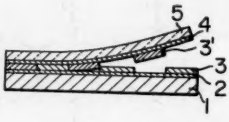
Kenji Cho, Tokyo; Minoru Takamizawa, and Yoshio Inoue, both of Annaka, all of Japan, assignors to Dai Nippon Printing Co. Ltd. and Shin-Etsu Chemical Co. Ltd., both of Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,435

Claims priority, application Japan, Apr. 5, 1979, 54-41416

Int. Cl.[3] G03C *11/12*; G03F *7/02*

U.S. Cl. 430—253 **4 Claims**



1. A method for the preparation of a planographic printing plate suitable for printing without supply of dampening water which comprises the steps of

(a) laminating a base plate provided on one surface thereof with successive layers of a first adhesive agent and a photocurable organopolysiloxane composition, the adhesive bonding strength of the first adhesive agent to the organopolysiloxane composition being increased with the exposure dose to light, and a sheet which is transparent to ultraviolet light and provided on one surface thereof with a layer of a second adhesive agent in such a manner that the layer of the photocurable organopolysiloxane composition and the layer of the second adhesive agent are in direct contact with each other, the adhesive bonding strength of the second adhesive agent to the photocurable organopolysiloxane composition being increased with the exposure dose to light and the second adhesive agent being imparted with a stronger adhesive bonding strength to the photocurable organopolysiloxane composition than the first adhesive agent with the exposure dose to light being the same,

(b) subjecting the laminate obtained in the step (a) to imagewise exposure to light through an image pattern opaque to ultraviolet light provided on said sheet,

(c) separating said sheet apart from said base plate by peeling so as that the layer of the organopolysiloxane composition photocured in the areas exposed to light is carried by the sheet and the layer of the uncured organopolysiloxane composition in the unexposed areas is left on the base plate, and

(d) subjecting the base plate bearing the layer of the uncured organopolysiloxane composition to exposure to light to effect photocuring of the organopolysiloxane composition.

4,271,256

METHOD FOR FORMING IMAGES

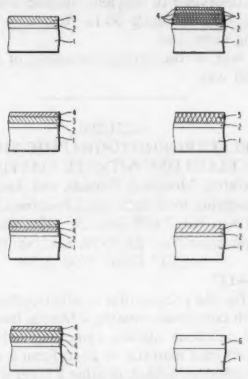
Keishiro Kido; Minoru Wada, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 943,901, Sep. 19, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,533

Claims priority, application Japan, Sep. 19, 1977, 52/112402

Int. Cl.[3] G03C *5/54*

U.S. Cl. 430—253 **22 Claims**

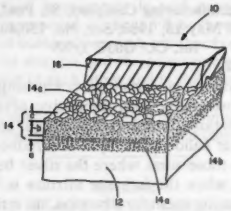


1. A method of forming images which comprises imagewise exposing to light or electromagnetic radiation a recording element comprising a support having directly or on a subbing layer thereon, as a recording layer, a vacuum deposited layer consisting essentially of at least about 20% by volume of an organic substance having good stability which is solid at less than about 40° C. and which is capable of being vacuum deposited and at least one of indium, tin or bismuth and an inorganic compound which is a metal sulfide selected from the group consisting of CrS, CrS_2, Cr_2S_3, MoS_2, FeS, FeS_2, CoS, NiS, Ni_2S, Cu_2S, Ag_2S, ZnS, In_2S_3, In_2S_2, GeS_x wherein x is a positive number of 2.5 or less, SnS, SnS_2 and mixtures thereof, a metal fluoride selected from the group consisting of MgF_2, CaF_2, RhF_3 and mixtures thereof, a metal oxide selected from the group consisting of MoO_3, InO, In_2O, In_2O_3, GeO, and mixtures thereof, or a halide selected from the group consisting of AgI, AgBr, AgCl, PbI_2, $PbBr_2$, $PbCl_2$, PbF_2, SnI_2, $SnCl_2$, CuI, CuBr, CuCl, KI, KCl and mixtures thereof, for light absorption to increase optical density and recording sensitivity, adhering a strippable film on the surface of said recording layer either prior to or after said imagewise exposure and peeling apart said strippable film from said recording layer after said imagewise exposure, whereby the exposed areas of said recording layer remain on the support and the non-exposed areas are transferred onto said strippable film, wherein said organic substance is at least one compound selected from the group consisting of higher fatty acids, aromatic carboxylic acids, polycarboxylic acids, abietic acid, salts of said acids, aromatic sulfonic acids, polymethacrylic acid, polystyrene, polyamides, polyvinyl alcohol, polyethylene glycol, methyl cellulose, polyvinyl butyral, poly(methyl methacrylate), poly(isobutyl methacrylate), polyethylene, rosin resin, thioureas, thiosemicarbazides, thiocarbamic acids, thiobenzophenones, imidazoles, triazoles, tetrazoles, thiazoles, basic dyes, acidic dyes, vat dyes, mordant dyes, sulfur dyes, oil-soluble dyes, disperse dyes, phthalocyanine pigments, anthraquinone type pigments and quinoline type pigments.

4,271,257
IMAGING FILM OF BISMUTH OR BISMUTH ALLOY

Harvey H. Wacks; Masatsugu Izu, both of Birmingham, and Donald J. Sarrach, Novi, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 724,993, Sep. 20, 1976, Pat. No. 4,138,262. This application Jan. 8, 1979, Ser. No. 1,965
Int. Cl.[2] G03C *1/78, 5/00, 1/94*
U.S. Cl. 430—276 4 Claims



1. An imaging film useful in the graphic arts comprising a substrate formed of a flexible, clear, plastic sheet material, a continuous, image-forming layer of bismuth or a bismuth alloy on a surface of the plastic sheet material, said layer consisting essentially of (1) an interfacial layer of bismuth or a bismuth alloy having a thickness of about 5 to about 100 angstroms, a portion at least of the atoms of the bismuth or bismuth alloy of the interfacial layer being embedded in the surface of the plastic sheet material substrate, and, (2) an outer layer of bismuth or a bismuth alloy on the interfacial layer, the outer layer having a roughened surface, the thickness of the image-forming layer of bismuth or bismuth alloy being about 1500 to about 3500 angstroms and having an optical density of about 3.5 to about 7, and a layer of a photosensitive, latent image forming organic material on the roughened surface of the outer layer of the image-forming bismuth or bismuth alloy layer, said photosensitive material layer having a hardness of at least 3.5 on the Mohs scale and a spectral sensitivity over the wave length range of from about 300 to about 500 nanometer, said photosensitive material layer being characterized in that it acts as a photoresist for the imaging film and as a protective coating for the image-forming bismuth, or bismuth alloy layer of the film and is capable upon the application of radiant energy thereto of changing between two states, one of which is a state in which the photosensitive material is substantially soluble with respect to a given solvent, and the other being a state in which the photosensitive material is substantially insoluble with respect to said solvent, thereby enabling a latent image corresponding to a preselected pattern to be formed therein, said imaging film being characterized in that the side thereof on which the photosensitive material layer is located has a black, non-shiny appearance, and the opposite side thereof has a shiny, metallic appearance thereby enabling the photosensitive material side of the imaging film to be readily distinguished from the substrate side of the film.

4,271,258
PHOTOPOLYMERIZABLE INK COMPOSITIONS

Kiyosumi Watariguchi, Iruma, Japan, assignor to Tamura Kaken Co., Ltd., Iruma, Japan

Filed Jul. 22, 1980, Ser. No. 171,053
Claims priority, application Japan, Jun. 11, 1980, 55-77686
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—284 7 Claims

1. A photopolymerizable ink composition mainly composed of a vehicle containing as essential ingredients

A. a diacrylate of an epoxy resin made of bisphenol A and epichlorohydrin, which has an average molecular weight of from about 1,000 to about 4,000;

B. a photosensitive resin having an average molecular weight of from about 1,000 to about 10,000, which has two or more acryloyl groups at the terminal through urethane bonds;

C. a urethane bond-free bifunctional photopolymerizable methacrylate monomer or oligomer;

D. a urethane bond-free polyfunctional photopolymerizable acrylate monomer or oligomer; and

E. a photo-initiator;

wherein the weight ratios between ingredients A, B, C, D and E are in the following ranges:

A:B=9:5–10:90

C:D=95:5–10:90

(A+B):(C+D)=15:85–70:30,

E being present in a ratio of from 0.3 to 8% by weight based on the entire ink composition.

4,271,259
PHOTOSENSITIVE COMPOSITIONS CONTAINING A PHOTOOXIDIZABLE COMPONENT

David S. Breslow, and David A. Simpson, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 758,746, Jan. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 644,237, Dec. 24, 1975, abandoned, which is a division of Ser. No. 405,192, Oct. 10, 1973, abandoned. This application Jun. 11, 1980, Ser. No. 158,198
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—286 4 Claims

1. A photosensitive composition comprising (1) from about 5% to about 98% of a free radical polymerizable ethylenically unsaturated component selected from ethylenically unsaturated monomers, ethylenically unsaturated polymers and mixtures thereof; capable of forming a high molecular weight polymer by addition polymerization or cross-linking, (2) a photooxidizable component, different from the said polymerizable ethylenically unsaturated component, in an amount which will contribute to the photosensitive composition at least 1.0×10^{-3} moles per 1000 cc. of the composition of olefinic unsaturation of the type in which there is no more than one hydrogen on each of the double bond carbons and in which there is at least one allylic hydrogen on at least one of the carbons adjacent to the double bond carbons, which allylic hydrogen is not on a bridgehead carbon, and (3) a photooxygenation sensitizer.

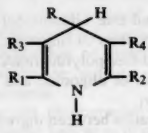
4,271,260
POSITIVE NONSILVER WASHOUT SYSTEMS CONTAINING DIHYDROPYRIDINES AND PHOTOOXIDANTS

Werner Abele, Neu-Isenburg; Mario Grossa, Dreieich, and Otto Pilz, Langen, all of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 971,663, Dec. 21, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,625
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758210
Int. Cl.[3] G03C *5/00*
U.S. Cl. 430—292 14 Claims

1. A process for the preparation of positive images which comprises exposing imagewise to actinic radiation a photosensitive element which comprises a support bearing a photosensitive layer comprising at least one alkali-soluble polymeric binder and a photosensitive system consisting essentially of

I. at least one dihydropyridine compound of the formula



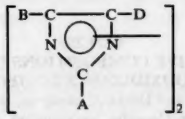
wherein

R is alkyl, alkenyl of 3 to 11 carbon atoms, phenyalkyl, phenylalkenyl, unsubstituted aryl of 6 to 10 carbon atoms and unsubstituted heteroaryl,

R_1 and R_2, which can be the same or different, are alkyl, and

R_3 and R_4, which can be the same or different, are COOR', COR', CN, R' is alkyl; and

II. at least one hexaarylbiimidazole compound of the formula



wherein the radicals A, B and D are either identical or different and are optionally substituted aryl groups derived from carbocyclic or heterocyclic compounds, and developing by washing out the exposed areas of the image.

4,271,261

DEVELOPER COMPOSITION FOR LITHOGRAPHIC PRINTING PLATES

Shigeki Shimizu, Tokyo, and Hiroshi Ide, Yokohama, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

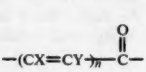
Filed Dec. 21, 1979, Ser. No. 106,010

Claims priority, application Japan, Dec. 25, 1978, 53-159658

Int. Cl.³ G03C *5/00, 5/24*

U.S. Cl. 430—325 **10 Claims**

1. A method of developing an image in a light exposed photosensitive coating of a lithographic printing plate, said coating composed of a photosensitive polymer having in the main chain thereof groups of the formula:



wherein X and Y independently represent hydrogen, halogen, cyano or nitro, and n in an integer of one or two, comprising: washing the exposed portions of said exposed photosensitive coating from said plate with a developer solution comprising ethylene glycol monophenyl ether and at least one acid selected from the group consisting of a mineral acid, an organic carboxylic acid and an organic sulfonic acid.

4,271,262

PHOTOIMAGING PROCESS WHICH USES SULFIDE CONTAINING POLYMERIC FILMS

Roland J. Kern, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 928,323, Jul. 26, 1978, which is a continuation-in-part of Ser. No. 756,034, Dec. 30, 1976, abandoned. This application Aug. 15, 1980, Ser. No. 178,423

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—325 **37 Claims**

1. An imaging process comprising

providing a photoimageable polymeric substrate containing photooxidizable organic sulfide functionality,

selectively exposing said substrate to radiation in the presence of oxygen and a photooxidation sensitizer to oxidize said organic sulfide functionality in the exposed regions to produce a latent image in said exposed regions, and

developing said latent image.

4,271,263

THERMALLY DEVELOPABLE PHOTOSENSITIVE COMPOSITIONS CONTAINING ACUTANCE AGENTS

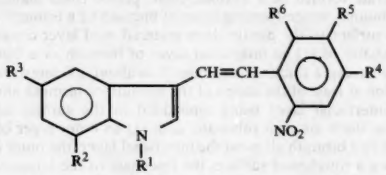
Edward J. Goettert, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 15, 1980, Ser. No. 150,403

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—522 **12 Claims**

1. A light-sensitive composition comprising an intimate mixture of a substantially light-insensitive silver compound which upon reduction gives a visible change and a sufficient quantity of a silver halide to catalyze said reduction to give a visible change in those areas where the silver halide has been exposed to light when the intimate mixture is heated in the presence of a reducing agent for silver ion, the intimate mixture including as an acutance dye a compound of the general formula:



wherein:

R^1 represents hydrogen, an alkyl group of 1 to 18 carbon atoms or an aryl group of 6 to 10 carbon atoms, the alkyl or aryl group optionally substituted by halogen, by an alkoxy group of 1 to 6 carbon atoms or by an aryl group of 6 to 10 carbon atoms;

R^2 and R^3 independently represent hydrogen, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, or halogen;

R^4 represents hydrogen, nitro, cyano, a carbalkoxy group having 1 to 6 carbon atoms, or halogen;

R^5 is hydrogen;

R^6 represents hydrogen, nitro, cyano, a carbalkoxy group having 1 to 6 carbon atoms, or halogen; or

R^5 and R^6 together constitute a benzo group.

4,271,264

STABILIZED LIQUID ENZYME AND COENZYME COMPOSITIONS

Ivan E. Modrovich, 1043 Mesa Dr., Camarillo, Calif. 93010

Continuation-in-part of Ser. No. 722,565, Sep. 13, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 862,106

Int. Cl.³ C12Q *1/54;* **C12N** *9/96*

U.S. Cl. 435—14 **42 Claims**

1. A stabilized liquid enzyme and coenzyme composition used in biological diagnostic determinations of glucose and which enzyme and coenzyme are normally unstable in an aqueous media, said composition comprising:

(a) at least 30% v/v of an aqueous vehicle,

(b) at least a sufficient amount of nicotinamide-adenine dinucleotide coenzyme or a coenzyme having nicotinamide-adenine dinucleotide as a moiety thereof to perform a determination dissolved in said aqueous vehicle,

(c) a nucleotide cooperating with the coenzyme or an enzyne in a determination reaction and which nucleotide has an adenosine moiety and a phosphate moiety,

(d) at least 100 I.U. of at least one enzyme dissolved in said aqueous vehicle including at least hexokinase or glucose

-6-phosphate dehydrogenase, and both said enzyme and coenzyme cooperating in a determination reaction such that glucose in a determination reaction can react with the nucleotide and ultimately permit generation of a further nicotinamide-adenine dinucleotide compound or a compound having nicotinamide-adenine dinucleotide as a moiety thereof which can be measured to enable a determination of glucose,

(e) a non-reactive aqueous miscible polyol organic solvent dissolved in said aqueous vehicle and which is liquid at least at room temperature in said aqueous vehicle and present in an amount of about 5% to about 25% v/v based on the total composition, and which solvent is effective to stabilize the enzyme and the coenzyme and nucleotide in the presence of each other and in the presence of an aqueous vehicle,

(f) and said composition having a pH from about 6.0 to about 8.5, such that the enzyme and coenzyme are stabilized.

4,271,265

METHOD AND REAGENT FOR THE DETERMINATION OF GLUTAMATE-OXALACETATE TRANSAMINASE AND GLUTAMATE-PYRUVATE TRANSAMINASE

Ulfert Deneke, Peissenberg; Peter Stahl, Bernried, and Walter Schneider, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,368

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834706

Int. Cl.³ C12Q *1/32, 1/52*

U.S. Cl. 435—16 **13 Claims**

1. In a method for the determination of glutamate-oxalacetate transaminase or of glutamate-pyruvate transaminase by the reaction of oxalacetate or pyruvate with glutamate with the formation of α-Ketoglutarate in buffered solution, the improvement comprising reacting the α-Ketoglutarate formed with γ-aminobutyrate in the presence of γ-aminobuyrate transaminase to form succinate semialdehyde, reducing NADP with said succinate semialdehyde in the presence of succinate semialdehyde dehydrogenase to form NADPH and measuring the NADPH as a measure of the glutamate transaminase component initially present.

4,271,266

PROCESS FOR PREPARING LINCOMYCIN

Malcolm E. Bergy; John H. Coats, and Vedpal S. Malik, all of Kalamazoo, Mich., assignors to The Upjohn Manufacturing Company, Wilmington, Del.

Filed Jun. 10, 1974, Ser. No. 477,766

Int. Cl.³ C12P *19/64*

U.S. Cl. 435—73 **4 Claims**

1. A novel process for preparing the antibiotic lincomycin which comprises cultivating *Streptomyces vellosus,* having the identifying characteristics of NRRL 8037, and lincomycin-producing mutants thereof, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic activity is imparted to said medium by the production of lincomycin.

4,271,267

PREPARATION OF L-TRYTOPHAN BY FERMENTATION

Hideaki Yukawa; Kazuoki Osumi; Terukatsu Nara, and Yoshihiro Takayama, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1979, Ser. No. 101,041

Claims priority, application Japan, Dec. 11, 1978, 53-152052

Int. Cl.³ C12P *13/22*

U.S. Cl. 435—108 **1 Claim**

1. A process for preparing L-tryptophan by fermenation which comprises

cultivating on a medium containing ethanol as the main carbon source a microorganism of the strain *Serratia marcescens* MT-5 that utilizes ethanol and has the ability to produce L-tryptophan, and

recovering the accumulated L-tryptophan from the culture.

4,271,268

PROCESS FOR PRODUCING D-ARABITOL

Akiko Fujiwara, Kamakura, and Setsuko Masuda, Yokohama, both of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 8, 1978, Ser. No. 940,690

Claims priority, application Luxembourg, Sep. 12, 1977, 78114

Int. Cl.³ C12P *7/18*

U.S. Cl. 435—158 **14 Claims**

1. A process for producing D-arabitol comprising cultivating a micro-organism of the species *Pichia haplophila* or mutants thereof in a nutrient medium containing a carbon source selected from the group consisting of a hydrocarbon and ethyl alcohol.

4,271,269

REGENERATION OF AN ENZYME IMMOBILIZATE

Giselher Franzmann, Witten, and Hans-Leo Hülsmann, Wetter, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed May 15, 1979, Ser. No. 39,482

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821890

Int. Cl.³ C12N *11/14*

U.S. Cl. 435—176 **6 Claims**

1. A method for regeneration of an enzyme immobilizate comprising an amorphous silicecous support to which there is bonded by adsorption via an amino alkoxy silane containing an amino alkyl or amino aryl group an inactivated enzyme which comprises desorbing said inactivated enzyme from said immobilizate by contacting said immobilizate with a solution of inorganic ammonium sulfate or a primary, secondary, tertiary or quaternary C_1 to C_6 alkyl or hydroxy alkyl ammonium sulfate having a concentration of 10 to 40 weight percent and a pH in the range of 5 to 11 and thereafter reactivating the so-treated immobilizate by conctacting the same with fresh enzyme solution to adsorb fresh enzyme to said support.

4,271,270

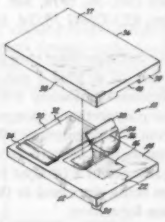
APPARATUS FOR CULTURING AND EXAMINING FUNGI

Patricia A. Lukacsek, 4014 W. Navaj Dr., Phoenix, Ariz. 85021

Division of Ser. No. 845,897, Oct. 27, 1977, which is a continuation-in-part of Ser. No. 789,773, Apr. 22, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,952

Int. Cl.³ C12M *1/28*

U.S. Cl. 435—294 **6 Claims**



1. An apparatus for culturing and examining fungi comprising:

(a) a base of optically clear material and configured with a planar top surface and a compartment formed therein so as to open upwardly onto the top planar surface thereof, the

compartment of said base being formed with square corners and flat surfaces to allow the passage of light rays with minimal refraction;

(b) a culture nutrient medium in jelled form within the compartment of said base and disposed to present a planar top surface which is flush with the planar top surface of said base;

(c) membrane means removably affixed on the top planar surface of said base so as to span the compartment thereof in contiguous engagement with the top surface of said culture nutrient medium to preserve the sterile state and moisture content thereof until ready for use;

(d) a cover slip supported on the top planar surface of said base adjacent the compartment thereof, said cover slip having a surface area which is larger than the open top of the compartment formed in said base and is movable into a position which spans the compartment and is in contiguous engagement with the top surface of said culture nutrient medium subsequent to removal of said membrane means; and

(e) a base cover of optically clear material demountably positioned on said base.

4,271,271

FIRE-RETARDANT MONOCARBOXLYLIC ACID AMIDE COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed May 7, 1980, Ser. No. 147,036

Int. Cl.³ C08J *9/12*

U.S. Cl. 521—82 **7 Claims**

1. A process for making fire-retardant foams consisting of blending a mixture of (a) a copolymer of 50 to 95 mole percent of a monovinyl aromatic monomer and 50 to 5 mole percent of an ethylenically unsaturated monocarboxylic acid amide monomer; (b) from 0.5 to 10 percent by weight of water; (c) from 10 to 20 parts per hundred parts of copolymer of an at least tri-brominated diphenylether; and (d) 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether until an intimate blend is obtained; heating the blend to a temperature of between 125° and 190° C. under sufficient pressure to prevent foaming of the blend; releasing the pressure to allow the blend to expand to a foam of density between 1 and 10 pounds per cubic foot; and cooling the resultant foam to room temperature.

4,271,272

POLYURETHANE SPONGES MANUFACTURED WITH ADDITIVE DISPERSED THEREIN

Robert L. Strickman, 729 Handwerg Dr., River Vale, N.J. 07675, and Melvyn B. Strickman, Academy St., Shiloh, N.J. 08353

Division of Ser. No. 305,870, Nov. 13, 1972, abandoned. This application Oct. 30, 1978, Ser. No. 955,880

Int. Cl.³ C08G *18/14, 18/16*

U.S. Cl. 521—110 **7 Claims**

1. A resilient polyurethane foam sponge product comprising an amount of a lotion of at least 4 percent by weight of the product sponge dispersed uniformly within the cellular structure of the synthetic polyurethane sponge, said sponge product produced by reaction of a component selected from the group consisting of polyesters and polyethers with an organic polyisocyanate in the presence of a catalyst to obtain a foam forming mass, the lotion being dispersed in the reaction mass prior to the onset of foam formation.

4. A resilient polurethane foam sponge product comprising an amount of a pesticide of at least 4 percent by weight of the product sponge dispersed uniformly within the cellular structure of the synthetic polyurethane sponge, said sponge product produced by reaction of a component selected from the group consisting of polyesters and polyethers with an organic polyisocyanate in the presence of a catalyst to obtain a foam forming mass, the pesticide being dispersed in the reaction mass prior to the onset of foam formation.

4,271,273

RIGID ISOCYANURATE POLYURETHANE FOAMS AND METHOD FOR PREPARING SAME

Jerome B. Biranowski, New York, N.Y.; Donald H. Lorenz, Basking Ridge, and Simon W. Kantor, Ridgewood, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,352

Int. Cl.³ C08G *18/14, 18/32, 18/76*

U.S. Cl. 521—110 **11 Claims**

1. Thermally stable, rigid cellular isocyanurate polyurethane foam comprising the post cured reaction product of reacting in the presence of a blowing agent and trimerization catalyst:

(a) polyol comprising at least about 14 wt% 2-butene,-1,4-diol; and

(b) aromatic polyisocyanate in an amount such that the active hydrogen groups present in the polyol are less than 50% of the number of isocyanate groups present in the polyisocyanate of the reaction mixture.

4,271,274

FLAMEPROOFED POLYESTERS OF IMPROVED VISCOSITY

Werner Schmidt, St. Augustin, and Rüdiger Minke, Troisdorf, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 39,034

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821292

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—111 **17 Claims**

1. A composition comprising a polyester, a brominated flameproofing agent for said polyester which is polymeric brominated acrylate and 0.5 to 20 percent by weight of an epoxy resin based on the total weight of the composition, said composition free of crosslinking agent or hardener.

4,271,275

FLUOROELASTOMER COMPOSITION CONTAINING OXIRANE ACID ACCEPTOR

James D. MacLachlan, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1979, Ser. No. 103,957

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—112 **5 Claims**

1. A peroxide curable fluoroelastomer composition comprising:

(A) a fluoroelastomer selected from the group consisting of:

(1) a copolymer whose interpolymerized units consist essentially of

(a) up to 3 mole %, based on the total moles of components (a) and (b), of units derived from a compound selected from the group: bromotrifluoroethylene and 4-bromo-3,3,4,4-tetrafluorobutene-1, with the proviso that enough of such units are present to provide at least 0.05 weight % bromine in the copolymer, and

(b) enough units derived from component (b-1) (b-2) or (b-3) as follows to make up the remainder of the copolymer;

b-1. tetrafluoroethylene and a perfluoroalkyl perfluorovinyl ether wherein the alkyl group contains 1–5 carbon atoms,

b-2. about 45–65 mole % of tetrafluoroethylene, about 20–55 mole % of a C_2–C_4 olefinic hydrocarbon and from 0 to about 30 mole % vinylidene fluoride, or

b-3. vinylidene fluoride, at least one fluorine-containing olefin copolymerizable therewith, and optionally said perfluoroalkyl perfluorovinyl ether, said olefin being a compound which contains 2–7 carbon atoms, con-

tains no bromine atom, and contains at least as many fluorine atoms as carbon atoms, and

(2) a blend of 10–95 weight percent of the copolymer (1) with 5–95 weight percent of a non-crosslinked fluoroelastomer comprising a copolymer of vinylidene fluoride and at least one other fluoroolefin,

(B) an organic peroxide curing agent,

(C) an unsaturated co-agent, and

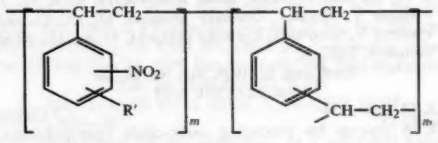
(D) 0.5–10 parts per 100 parts of the fluoroelastomer composition of an oxirane.

4,271,276
METHOD FOR PREPARING CROSS-LINKED VINYLAROMATIC POLYMERS CONTAINING NITRO GROUPS

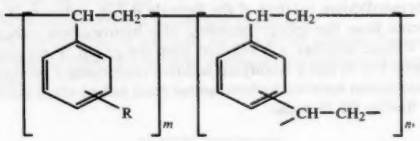
Serafima B. Makarova, Leningradsky prospekt, 57, kv. 117; Jury A. Leikin, ulitsa Grishina, 8, kv. 103; Anatoly V. Smirnov, Zelenodolskaya ulitsa, 32, korpus 2, kv. 7, all of Moscow; Valery Y. Semeny, ulitsa Navoi, 57, kv. 27, Kiev; Eleonora M. Pakhomova, ulitsa Volgina, 25, korpus 2, kv. 10, Moscow; Galina I. Korelskaya, ulitsa Polbina, 60, kv. 206, Moscow; Antonin P. Polikarpova, Volzhsky bulvar, 36, kv. 17, Moscow; Andrei A. Ilinsky, Botanicheskaya ulitsa, 27, kv. 7, Moscow; Olga N. Vlasovskaya, Profsojuznaya ulitsa, 100, korpus 4, kv. 24, Moscow, and Ljudmila A. Tikhonova, Domodedovskaya ulitsa, 11, korpus 1, kv. 191, Moscow, all of U.S.S.R.

Filed Feb. 28, 1977, Ser. No. 772,473
Int. Cl.³ C08F *8/30*
U.S. Cl. 525—340 **6 Claims**

1. A method for preparing cross-linked vinylaromatic polymers containing nitro groups having the general formula



where R' is selected from the group consisting of H, NO_2, COOH, SO_3H, $P(O)(OH)_2$, P(O)H(OH), m is from 60 to 99, and n is from 40 to 1, consisting in that the cross-linked polymers having the general formula



where R is selected from the group consisting of H, COOH, SO_3H, $P(O)(OH)_2$ and P(O)H(OH), m is from 60 to 99 and n is from 40 to 1, are treated, at a temperature of from −5° to 95° C., with a mixture of an alkali metal nitrate and an acid agent selected from the group consisting of sulphuric acid, polyphosphoric acid, glacial acetic acid, and acetic anhydride, the alkali metal nitrate being taken in the quantity from 0.1 to 8 moles per mole of the starting cross-linked polymer.

4,271,277
CURING CATALYST FOR THERMOSETTING POWDER PAINTS

Robert F. Golownia, Northfield, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,715
Int. Cl.³ C08L *61/28, 61/26, 63/00*
U.S. Cl. 525—351 **7 Claims**

1. A thermosetting powder paint composition containing reactive polymer having a reactive carboxyl, hydroxyl and/or amide groups adapted to be cross-linked upon heating with an aminoplast resin, the improvement comprising:

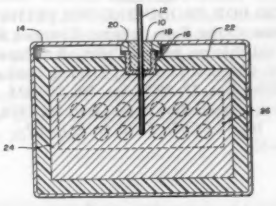
said reactive polymer having a molecular weight between 1,000 and 10,000 and selected from epoxy polymer, polyester polymer, acrylic polymer, phenolic polymer, and vinyl polymer said reactive polymer having a melt temperature between 80° C. and 200° C.; and

said powder paint composition containing by weight at least about 0.25% of a heat curing catalyst of an amine salt of cyclohexyl sulfamic acid, whereby said powder paint compositions are adapted to cure as a paint coating substantially free of surface pin-holes.

4,271,278
CATHODE MATERIALS

Gary M. Phillips, St. Paul, and Darrel F. Untereker, Cedar, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 951,862, Oct. 16, 1978, Pat. No. 4,223,110. This application Sep. 10, 1979, Ser. No. 74,153
Int. Cl.³ C08F *8/18, 8/22*
U.S. Cl. 525—356 **15 Claims**



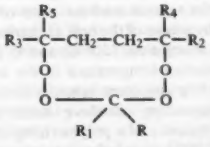
1. A cell including an anode and a cathode wherein the cathode is prepared by a method comprising the steps of mixing polymeric material selected from the group consisting of P2VP, P4VP, and mixtures thereof with a quantity of iodine and heating the resultant mixture in a sealed container in the presence of a protective atmosphere at a temperature of at least about 150° C.

4,271,279
CYCLIC PERKETALS AND THEIR USE FOR CROSS-LINKING HIGH DENSITY POLYETHYLENE

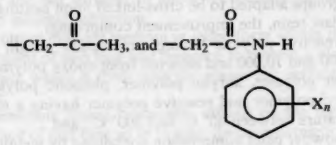
Ronald L. Pastorino, Larkspur; Roger N. Lewis, Martinez, both of Calif., and Charles B. Abma, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 591,783, Jun. 30, 1975, abandoned. This application May 21, 1976, Ser. No. 688,874
Int. Cl.² C08F *8/06*
U.S. Cl. 525—387 **21 Claims**

1. A composition for making cross-linked high density polyethylene comprising: high density polyethylene blended with an effective amount of an organic peroxide for the crosslinking thereof, said organic peroxide having the formula:



wherein each of R_2, R_3, R_4 and R_5 is selected from alkyl having from 1–4 carbon atoms; each of R and R_1 is selected from alkyl, hydroxy alkyl and alkyl carboxylate ester groups having up to about 10 carbon atoms,



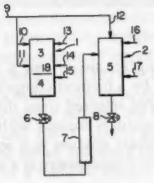
where n=0 to 3 and X is lower alkyl or alkoxy of up to about 5 carbon atoms; provided that when all of R_2, R_3, R_4 and R_5 are methyl not more than one of R and R_1 is methyl and the other of R and R_1 is larger than ethyl when it is alkyl.

4,271,280

PROCESS FOR PRODUCING POLYETHYLENE

Yasushi Tomura, Chiba; Fujio Sakuma, Kisarazu; Seiji Suzuki, and Masayuki Shimizu, both of Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 17, 1979, Ser. No. 103,923
Claims priority, application Japan, Dec. 26, 1978, 53-161710
Int. Cl.[3] C08F *2/02, 4/28, 10/02*
U.S. Cl. 526—65 **5 Claims**



1. In a process for polymerizing ethylene at a high temperature and a high pressure using two autoclave reactors connected in a series through a heat exchanger, by using the preceding autoclave reactor partitioned into a first and second reaction zone, feeding the major part of the starting ethylene into the first reaction zone of the preceding autoclave reactor, feeding the remaining starting ethylene into the succeeding autoclave reactor, polymerizing the ethylene fed into the first reaction zone of the preceding autoclave reactor in the presence of a polymerization initiator under a pressure of 1,000–2,800 kg/cm^2 at a temperature of 130°–200° C., introducing the reaction mixture thus obtained into the second reaction zone of the preceding autoclave reactor, polymerizing the reaction mixture in the presence of a polymerization initiator at a temperature of 210°–280° C., cooling the reaction mixture discharged from the second reaction zone of the preceding autoclave reactor by means of the heat exchanger to a temperature which is not lower than 120° C. and is 20° C. or more lower than the reaction temperature in the second reaction zone of the preceding autoclave reactor, feeding the cooled mixture into the succeeding autoclave reactor and polymerizing it there in the presence of a polymerizing initiator under a pressure of 1,000–2,800 kg/cm^2, the improvement which comprises using a reactor having one reaction zone as the succeeding autoclave reactor and polymerizing the mixture fed into the succeeding autoclave reactor at a temperature of 210°–280° C.

4,271,281

PROCESS FOR PREPARING STYRENIC POLYMER PARTICLES

Donald J. Kelley; David J. Williams, both of Lunenburg, and Stephen V. Slovenkai, Leominster, all of Mass., assignors to American Hoechst Corporation, Somerville, N.J.

Filed May 29, 1980, Ser. No. 154,184
Int. Cl.[3] C08F *2/20*
U.S. Cl. 526—80 **15 Claims**

1. In a suspension polymerization process for preparing styrenic polymer particles which comprises providing a stirred, aqueous suspension of polymeric seed particles, adding gradually to the suspension styrenic monomer, polymerizing the monomer in the suspension in the presence of suspension polymerization initiator, and continuing the addition of monomer to the suspension as the polymerization proceeds, the improvement which comprises introducing the styrenic monomer below the surface of the suspension.

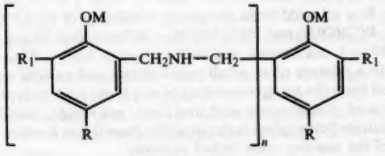
4,271,282

PROCESS FOR PRODUCING CARBO-CHAIN HOMO-POLYMERS, BLOCK- AND RANDOM COPOLYMERS OF CONJUGATED DIENES WITH VINYL-AROMATIC MONOMERS

Viktor P. Judin, pereulok Mendeleeva, 7, kv. 71; Valentin P. Shatalov, ulitsa Geroev Stratosfery, 1, kv. 4; Leonid V. Kovtunenko, Leninsky prospekt, 13, kv. 46; Valeria G. Shalganova, ulitsa Koltsovskaya, 54, kv. 57; Nadezhda K. Kashkina, ulitsa Skladskaya, 2, kv. 25; Lidia N. Mistjukova, ulitsa Merkulova, 4, kv. 53; Neonila M. Semenova, ulitsa Tsiolkovskogo, 7/2, kv. 56; Zinaida N. Korbanova, ulitsa Mendeleeva, 3, kv. 10; Ivan P. Mitin, ulitsa Rostovskaya, 46/6, kv. 7; Vladimir V. Moiseev, Leninsky prospekt, 63, kv. 12, and Vladimir V. Kosovtsev, Leninsky prospekt, 13, kv. 13,, all of Voronezh, U.S.S.R.

Filed Aug. 22, 1979, Ser. No. 68,520
Int. Cl.[3] C08F *4/48*
U.S. Cl. 526—174 **7 Claims**

1. A process for producing carbo-chain homopolymers, block- and random copolymers of conjugated dienes with vinylaromatic monomers comprising polymerization of monomers selected from the group consisting of dienes, vinylaromatic monomers and divinylaromatic monomers, or copolymerization thereof in a medium of a hydrocarbon solvent at a temperature ranging from −30° to +150° C. in the presence of an organolithium catalyst of the formula $R(Li)_x$, wherein R is selected from the group consisting of a hydrocarbon radical and a diene polymer; x is selected from the group of integers, of from 1 to 4; and a modifying additive comprising a product of interaction between a phenolamine resin and an alkali metal and having the formula:



wherein n is selected from the group of integers of from 1 to 10; M is selected from the group consisting of sodium and potassium; R is selected from the group consisting of an alkyl with a number of carbon atoms of from 2 to 20 and an arylalkyl with a number of carbon atoms of from 7 to 20; R_1 is selected from the group consisting of an alkyl with a number of carbon atoms of from 1 to 6, and an arylalkyl with a number of carbon atoms of from 7 to 9, and a hydrogen; said modifying additive being taken in an amount of from 0.07 g/equiv. per one g/equiv. of active lithium of said organolithium catalyst.

4,271,283

SUSPENSION POLYMERIZATION PROCESS FOR PRODUCING LARGE POLYMER PARTICLES

Heino Puhk, North Olmsted, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 954,553, Oct. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 889,149, Mar. 23, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,345

Int. Cl.[3] B32B *27/30*; C08F *220/04, 220/06, 220/20*

U.S. Cl. 526—317 4 Claims

1. An aqueous suspension polymerization process for producing suspension polymer particles by polymerizing a mixture of ethylenically unsaturated monomers in an aqueous medium under suspension polymerization conditions to produce polymer particles greater than about 150 microns, the improvement comprising:

providing a monomer mixture comprising by weight between about 25% and 50% pentaerythritol triacrylate, 1% and 10% ethylenically unsaturated monocarboxylic acid monomer, and the remainder being other ethylenically unsaturated monomer.

4,271,284

PROCESS FOR THE PRODUCTION OF POLY(AMINE ALLYL HALIDE HALOHYDRIN SILICATE) COPOLYMER AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 862,020, Dec. 19, 1977, Pat. No. 4,157,438, which is a continuation-in-part of Ser. No. 757,239, Jan. 6, 1977, Pat. No. 4,069,391, which is a continuation of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259. This application Jan. 19, 1979, Ser. No. 4,683

Int. Cl.[3] C08G *61/12, 65/24, 77/00*; C08F *30/08*

U.S. Cl. 528—28 12 Claims

1. The process for the production of a poly(allyl halide amine halohydrin silicate) resinous product by mixing the following components:

(a) an allyl halide,

(b) an amine,

(c) an oxidated silicon compound,

(d) an alkali catalyst,

(e) a polyfunctional halohydrin compound

then the mixture is agitated for 10 to 60 minutes between ambient temperature and the boiling temperature of the reactants.

4,271,285

ARYL SULFIDE/SULFONATE POLYMER

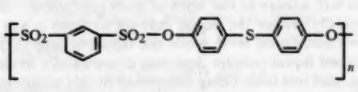
Hans Dressler, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 30, 1979, Ser. No. 98,920

Int. Cl.[3] C08G *75/24*

U.S. Cl. 528—175 1 Claim

1. A linear aryl sulfide/sulfonate polymer having improved thermal stability consisting essentially of units of the formula:



wherein n is an integer of from 3 to about 250.

4,271,286

PROCESS FOR THE PREPARATION OF ETHERIFIED METHYLOLAMINOTRIAZINES

Walter Michel; Hans Hönel, both of Frankfurt am Main; Manfred Schön, Dudenhofen, and Wolfgang Kaiser, Hanau, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,416

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915315

Int. Cl.[3] C08G *12/30*

U.S. Cl. 528—254 9 Claims

1. In the process for the preparation of methylolaminotriazines etherified with alkanols and having per mol of the aminotriazine, an analytically determined average of 0.6 n to 2 n methylol groups, which are etherified to the extent of 30 to 60%, n being the number of amino groups in the aminotriazine, wherein an aminotriazine is warmed to 80° to 130° C. with 0.7 n to 3 n mols of formaldehyde, 2 n to 10 n mols of an alkanol or a mixture of alkanols having 1 to 8 carbon atoms, the carbon chain of which, if having more than 2 carbon atoms, can also be interrupted by an oxygen atom, and 0 to 5 n mols of water, per mol of the aminotriazine for 0.2 to 20 minutes, under elevated pressure, wherein the improvement comprises said aminotriazine being first heated to a temperature of 60°–90° C. in the presence of the formaldehyde and 0 to 30% by weight of the total amount of alkanol or alkanol mixture for 1 to 30 minutes at a pH 8 to 11 whereupon the remainder of the alkanol or alkanol mixture is added and the mixture is subsequently heated to 80° to 130° C. under elevated pressure at a pH of 3 to 8, for 0.2 to 20 minutes.

4,271,287

PROCESS FOR THE CONTINUOUS POLYMERIZATION OF POLYETHYLENE TEREPHTHALATE IN THE SOLID PHASE

Nipun M. Shah, Fayetteville, N.C., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 79,669, Sep. 28, 1979. This application Jul. 28, 1980, Ser. No. 173,205

Int. Cl.[3] C08G *63/26*

U.S. Cl. 528—272 4 Claims

1. In a process for the continuous production of high molecular weight polyethylene terephthalate by polycondensation in the solid phase from a dried granulated polyethylene terephthalate in which the granulated polyethylene terephthalate is first at least partially crystallized following which the partially crystallized material is subjected to polycondensation, the improvement which comprises:

(A) first preheating said polymer under forced motion to a temperature in the range of about 180° C. to 200° C. without substantial increase in the intrinsic viscosity of said polymer and while maintaining the crystallinity below about 40%;

(B) at least partially crystallizing said preheated polymer in a fixed bed crystallizer by feeding said polymer into said fixed bed at a temperature in the range of about 180° to 200° C., maintaining it in said bed for a time sufficient to raise the crystallization to a value in the range of 40 to 60% while maintaining the intrinsic viscosity of the polymer below about 0.75, and thereafter removing it from said bed at a temperature in the range of about 195° to 215° C.; and

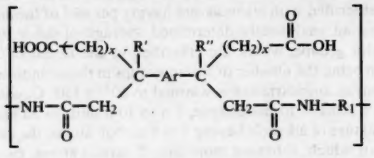
(C) effecting said polycondensation under forced motion in an agitated reactor by introducing the product of step (B) into said agitator reactor and raising the temperature thereof to a value in the range of about 220° to 245° for a period of time sufficient to raise the intrinsic viscosity of the polymer to a value of at least 0.70 up to about 1.4, steps (B) and (C) being conducted under a non-reactive gas atmosphere.

4,271,288
NOVEL POLYAMIC ACID POLYMERS AND POLYIMIDE DERIVATIVES THEREOF

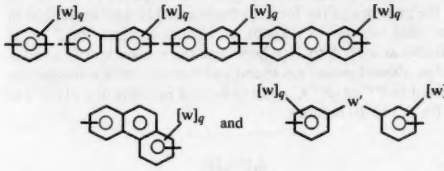
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 53,670, Jul. 2, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 113,892
Int. Cl.³ C08G *73/10, 73/14*
U.S. Cl. 528—353 **15 Claims**

1. A polyamic acid polymer comprising recurring units at least some of which comprise the structural formula:



wherein Ar is a C_{6-20} arylene radical selected from the group consisting of:



wherein w in each occurrence is halo, nitro, or a C_{1-10} radical selected from alkyl, aryl, alkaryl, aralkyl, haloalkyl, haloaryl, aryloxy and alkoxy; q is an integer from zero to 4; and w' is oxygen, sulfur, alkylene, oxyalkylene, alkylenedioxy or polyoxyalkylene; R', R'' individually are hydrogen or alkyl, aryl, aralkyl or alkaryl radicals containing up to 10 carbon atoms, both x's are either zeros or ones; and R_1 is each occurrence a divalent organic radical remnant of a diamine containing at least 2 carbon atoms, and any remainder being polyamic acid monomeric units formed by reaction of a tetracarboxylic acid dianhydride and a diamine.

4,271,289
OXYGEN-CURABLE MERCAPTO-FUNCTIONAL ORGANIC COMPOUND COMPOSITIONS CATALYZED BY METAL CARBONYL COMPOUNDS AND METHOD OF FORMING HIGHER MOLECULAR WEIGHT PRODUCTS THEREFROM

Gary R. Homan, and Chi-long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,282
Int. Cl.³ C08G *75/04*
U.S. Cl. 528—374 **22 Claims**

1. A composition, stable in the absence of oxygen, which consists essentially of a product obtained by mixing the following substantially in the absence of oxygen

(A) 100 parts by weight of at least one mercapto-functional organic compound which contains an average of at least two mercapto groups per molecule and is free of silicon atoms, aliphatic unsaturation and radicals which are reactive with mercapto groups at room temperature;

(B) 0 to 200 parts by weight of at least one filler; and

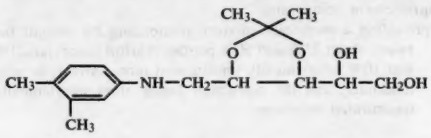
(C) a catalytic amount of a metal carbonyl compound selected from the group consisting of $Fe(CO)_5$, $Fe_2(CO)_9$, $Fe_3(CO)_{12}$, dicyclopentadienyldiiron tetracarbonyl, butadieneiron tricarbonyl, cyclohexadieneiron tricarbonyl, $Ni(CO)_4$, dicyclopentadienyldinickel dicarbonyl, $Mn_2(CO)_{10}$, methylcyclopentadienylmanganese tricarbonyl and cyclopentadienylcobalt dicarbonyl.

4,271,290
3,4-XYLIDINE-N-RIBITYL

Guy Farges, Montlucon, and Anne-Marie Michard, Commentry, both of France, assignors to A.E.C. Societe de Chimie Organique et Biologique, Commentry, France

Filed Jun. 13, 1979, Ser. No. 48,099
Claims priority, application France, Jun. 15, 1978, 78 17905
Int. Cl.³ C07H *5/06*
U.S. Cl. 536—22 **2 Claims**

1. N-[2,3-(O-Isopropylidene)-(D)-ribityl]-3,4-xylidine of the formula

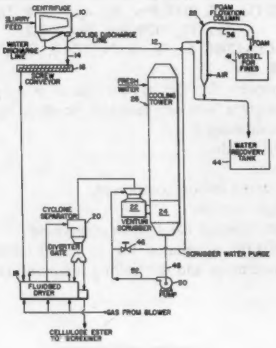


2. N-[2,3-(O-Isopropylidene)-ribofuranoside]-3,4-xylidine.

4,271,291
PROCESS FOR RECOVERING CELLULOSE ESTER FINES

Bradley H. Dayvolt, Chuckey, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,911
Int. Cl.³ C08B *3/26*
U.S. Cl. 536—65 **5 Claims**



1. A process for recovering cellulose ester fines from scrubber-coolant water in which the cellulose ester fines are suspended, the process comprising:

continuously introducing said scrubber-coolant water into a vertically disposed column of liquid adjacent the upper end thereof at a location just below the liquid level of the liquid column, the liquid in the column being comprised of previously-introduced scrubber-coolant water;

continuously sparging gas into the lower end of said vertically disposed liquid column to generate gas bubbles and consequently producing a counter-current effect in which the generated gas bubbles, to which said cellulose ester fines will adhere to the layer of each gas bubble, will rise upwardly within the liquid column to form a wet foam above said liquid level while the liquid of said vertically disposed liquid column descends downwardly in the column, said wet foam being comprised of said cellulose ester fines, gas and portions of said liquid;

continuously forming said wet foam to form a flow of wet

foam, thereby forcing the resulting flowing wet foam upwardly and away from said liquid level;

guiding said resulting flowing wet foam along a straight-line path extending generally in a horizontal plane above, to one side of, and away from said liquid column, said path being pitched downwardly from said horizontal plane;

removing liquid from said wet foam while guiding said flowing wet foam along said downwardly pitched straight-line path to form a drier foam comprised of about 25 to about 60% cellulose ester fines and about 75 to about 40% liquid, as measured on a gas-free basis; and

then introducing said drier foam into a vessel and dissolving said cellulose ester fines.

4,271,292
2-DECARBOXY-2-TETRAZOLYL-19-KETO-PG COMPOUNDS

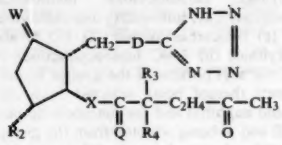
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, abandoned. This application Mar. 20, 1980, Ser. No. 132,225

Int. Cl.³ C07C *177/00*; C07D *257/06*

U.S. Cl. 542—429 **5 Claims**

1. A compound of the formula



wherein D is

(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(3) cis-CH_2—CH=CH—CH_2—CH_2—,
(4) trans—$(CH_2)_3$—CH=CH—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(6) —$(CH_2)_3$—CH_2—CF_2—,
(7) —$(CH_2)_3$—O—CH_2—,
(8) —(CH_2)—O—$(CH_2)_2$—,
(9) —CH_2—O—$(CH_2)_3$—,
(10) —(m-Ph)—$(CH_2)_2$—, or
(11) —(m-Ph)—O—CH_2—,

wherein —(m-Ph)— is inter-meta-phenylene and

wherein g is zero, one, two, or three;

wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein W is oxo, methylene, α—OH:β—H, or α—H:β—OH; and

wherein X is cis- or trans—CH=CH—, —C≡C— or —CH_2CH_2—.

4,271,293
BENZOFURANYL-BENZIMIDAZOLES

Josef Bremen, Leverkusen; Bernhard Wehling, Cologne, and Carl-Wolfgang Schellhammer, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

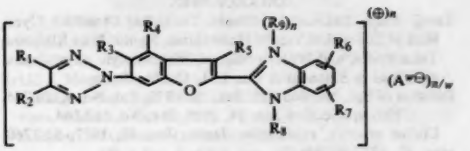
Filed May 11, 1979, Ser. No. 38,309

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821116

Int. Cl.³ C07D *405/14*

U.S. Cl. 542—435 **3 Claims**

1. A compound of the formula



in which

R_1 is alkyl with 1 to 12 carbon atoms, alkoxy with 1–4 carbon atoms, benzyl, styryl, or phenyl optionally be substituted by alkyl with 1–4 C atoms, phenyl, alkoxy with 1–4 C atoms or chlorine,

R_2 is hydrogen cyano, carboxyl, C_1–C_4-alkylcarbonylamino, benzoylamino or R_1, or

R_1 and R_2 together are a fused naphthalene ring or benzene ring optionally substituted by alkyl with 1 to 4 carbon atoms and/or alkoxy with 1 to 4 carbon atoms,

R_3 and R_4 each independently is hydrogen, methyl, ethyl, methoxy or chlorine,

R_5 is hydrogen, alkyl with 1 to 4 carbon atoms, or phenyl optionally substituted by methyl and/or methoxy,

R_6 is hydrogen, alkyl with 1 to 4 carbon atoms, methoxy, chlorine, alkylsulphonyl with 1 to 4 carbon atoms, cyano, sulpho or carboxyl,

R_7 is hydrogen, methyl, methoxy or Cl,

R_8 is alkyl with 1 to 4 carbon atoms, hydroxyalkyl with 2 to 4 carbon atoms, cyanoethyl, or phenyl, cyclohexyl of benzyl optionally substituted by chlorine, methyl or methoxy,

R_9 is alkyl with 1 to 4 carbon atoms optionally substituted by hydroxyl or alkoxy with 1 to 4 carbon atoms, benzyl optionally substituted by chlorine or methoxy, or —CH_2CN, —CH_2CONH_2 or —CH_2COOR,

R is alkyl with 1 to 4 carbon atoms,

n is 0 or 1,

$A^{\ominus}$ is a colorless anion of an organic or inorganic acid, and

w is the valence of A.

4,271,294
AMINOALKOXY DERIVATIVES OF AROMATIC KETONES

Louis Felder, Basel; Rudolf Kirchmayr, Aesch, and Rinaldo Küsler, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

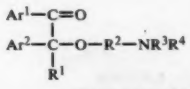
Continuation of Ser. No. 968,889, Dec. 13, 1978, abandoned. This application Mar. 13, 1980, Ser. No. 129,876

Claims priority, application Switzerland, Dec. 22, 1977, 15883/77

Int. Cl.³ C07C *97/10*; C07D *265/30, 241/04, 211/08*

U.S. Cl. 544—87 **6 Claims**

1. A compound of formula I



(I)

wherein Ar^1 and Ar^2, each independently of the other, represent phenyl or phenyl which is substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen, R^1 represents a group —O—R^2-$N(R^3)(R^4)$, R^2 represents C_2–C_4-alkylene, R^3 represents hydrogen, C_1–C_{12}-alkyl, allyl, benzyl, cyclohexyl, C_2–C_4-hydroxyalkyl or C_3–C_8-alkoxyalkyl, and R^4 represents C_1–C_{12}-alkyl, allyl, C_2–C_4-hydroxyalkyl, C_3–C_8-alkoxyalkyl, cyclohexyl, benzyl or phenyl, or R^3 and R^4 together represent alkylene of 4 to 5 carbon atoms, 3-oxapentamethylene, or a group —CH_2—CH_2—NR_5—CH_2—CH_2— and R^5 represents hydrogen or C_1–C_4-alkyl.

4,271,295
OXAZOLINES

Teruji Tsuji, Takatsuki; Mitsuru Yoshioka; Shoichiro Uyeo, both of Toyonaka; Yoshio Hamashima, Kyoto; Ikuo Kikkawa, Takarazuka, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

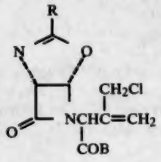
Division of Ser. No. 868,422, Jan. 10, 1978, Pat. No. 4,220,766. This application Jan. 14, 1980, Ser. No. 112,144

Claims priority, application Japan, Jan. 10, 1977, 52-1760; Mar. 30, 1977, 52-36613

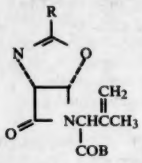
Int. Cl.[3] **C07D** *498/04, 401/14, 413/14*

U.S. Cl. 544—182 **1 Claim**

1. A process for preparing a compound of the formula



which comprises reacting a compound of the formula



with 1 to 2 mole equivalents of chlorine or sulfuryl chloride in 5 to 50 volumes by weight of aromatic hydrocarbon or ester solvent at a temperature of from about −20° C. to 30° C., wherein in the above formulas R represents (a) 1–6 C alkyl, (b) 7–15 C aralkyl, (c) 7–15 C heterocyclicalkyl, (d) 7–9 C aryloxyalkyl, (e) 7–9 C heterocyclicoxyalkyl, (f) 6–10 C aryl, (g) 6–10 C heterocyclic, (h) 1–6 C alkoxy, (i) 7–15 C aralkoxy, (j) 7–15 C heterocyclicalkoxy, (k) 6–10 C aryloxy, (l) 6–10 C heterocyclicoxy, (m) carbamoyl, or (n) 2–7 C carbalkoxy, each of said groups being unsubstituted or substituted by hydroxy, 1–6 C alkanoyloxy, 1–3 C alkoxy, 7–9 C aralkoxy, 6–8 C aryloxy, oxo, amino, 1–3 C alkylamino, 1–5 C alkanoylamino, nitro, 1–3 C alkyl, 6–10 C aryl, carboxy, protected carboxy, cyano or halo, and COB is carboxy or protected carboxy.

4,271,296
OXAZOLINES

Teruji Tsuji, Takatsuki; Mitsuru Yoshioka; Shoichiro Uyeo, both of Toyonaka; Yoshio Hamashima, Kyoto; Ikuo Kikkawa, Takarazuka, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

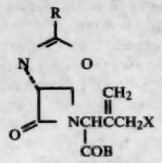
Division of Ser. No. 868,422, Jan. 10, 1978, Pat. No. 4,220,766. This application Jan. 14, 1980, Ser. No. 112,145

Claims priority, application Japan, Jan. 10, 1977, 52-1760; Mar. 30, 1977, 52-36613

Int. Cl.[3] **C07D** *498/04, 401/14, 413/14*

U.S. Cl. 544—182 **6 Claims**

1. A compound of the following formula:



wherein

R represents (a) 1–6C alkyl, (b) 7–15C aralkyl, (c) 7–15C heterocyclicalkyl, (d) 7–9C aryloxyalkyl, (e) 7–9C heterocyclicoxyalkyl, (f) 6–10C aryl, (g) 6–10C heterocyclic, (h) 1–6C alkoxy, (i) 7–15C aralkoxy, (j) 7–15C heterocyclicalkoxy, (k) 6–10C aryloxy, (l) 6–10C heterocyclicoxy, (m) carbamoyl, or (n) 2–7C carbalkoxy, each of said groups being unsubstituted or substituted by hydroxy, 1–6C alkanoyloxy, 1–3C alkoxy, 7–9C aralkoxy, 6–8C aryloxy, oxo, amino, 1–3C alkylamino, 1–5C alkanoylamino, nitro, 1–3C alkyl, 6–10C aryl, carboxy, protected carboxy, cyano or halo,

X represents (a) halo, (b) hydroxy, (c) up to 5C acyloxy selected from the group of nitrooxy, sulfurous acyloxy, formyloxy, acetoxy, propionyloxy, trifluoroacetoxy, β-hydroxypropionyloxy, α-haloacetyloxy, benzyloxy, nicotinoyloxy, carbamoyloxy, methoxycarbonyloxy, aminopropionyloxy, sulfenyloxy and sulfinyloxy, (d) 1–6C alkoxy, (e) thiocarbamoylthio, (f) 1–5 C alkylthio, (g) 6–9C arylthio, (h) 6–9C heterocyclicthio, or (i) 1–6C sulfinyl, the aryl portion of the groups R and X and the substituents thereof being selected from the group of phenyl and naphthyl and the heterocyclic portion of the groups R and X being selected from the group consisting of furyl, thienyl, pyrrolyl, oxazolyl, isoxazolyl, oxadiazolyl, oxatriazolyl, thiazolyl, isothiazolyl, thiadiazolyl, thiatriazolyl, pyrazolyl, imidazolyl, triazolyl, tetrazolyl, pyridyl, pyrimidyl, pyrazinyl, as-triazinyl, quinolyl, isoquinolinyl, and 2-benzothiazolyl, and COB is carboxy or protected carboxy conventional in the chemistry of penicillins and cephalosporins.

4,271,297
PROCESS FOR THE PRODUCTION OF SUSPENSION OR SOLUTIONS OF CYANURIC CHLORIDE IN ORGANIC SOLVENTS (I)

Klaus Hentschel, Kalmthout, Belgium; Friedrich Bittner, Bad Soden, and Gerd Schreyer, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,872

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850308

Int. Cl.[3] **C07D** *251/28*

U.S. Cl. 544—190 **9 Claims**

1. A process for the production of a suspension or solution of cyanuric chloride in a water containing organic solvent comprising spraying cyanuric chloride downwardly and outwardly at a temperature in its molten range from the upper portion of a vertical tubular zone closed at the top thereof to contact and mix with water containing organic solvent which forms a liquid layer defining, said tubular zone, constricting said layer in breast-shaped manner downwardly below the place of entry of the cyanuric chloride into the tubular zone to form a narrower discharge opening, discharging water containing organic solvent as a spray tangentially to said layer and directed slightly upwardly in the direction of the closed top above said constriction and point of introduction of the cyanuric chloride and thereby forming said liquid layer along the entire tubular zone to the point of introduction of the cyanuric chloride, whereby the thickness of said layer where it is formed in the breast-shaped constriction is greater than it is in the remainder of the tubular zone.

4,271,298

PROCESS FOR THE PRODUCTION OF SUSPENSIONS OR SOLUTIONS OF CYANURIC CHLORIDE IN WATER

Klaus Hentschel, Kalmthout, Belgium; Friedrich Bittner, Bad Soden, and Gerd Sohreyer, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,875

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850242

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.[3] C07D *251/28*

U.S. Cl. 544—190 4 Claims

1. A process for the production of a suspension or solution of cyanuric chloride in water comprising spraying cyanuric chloride downwardly and outwardly at a temperature in its molten range from upper portion of a vertical tubular zone closed at the top thereof to contact and mix with said water which forms a liquid layer defining said tubular zone, constricting said layer in breast-shaped manner downwardly below the place of entry of the cyanuric chloride into the tubular zone to form a narrower discharge opening, discharging said water as a spray tangentially to said layer and directed slightly upwardly in the direction of the closed top above said constriction and below the point of introduction of the cyanuric chloride and thereby forming said liquid layer along the entire tubular zone to the point of introduction of the cyanuric chloride, whereby the thickness of said layer where it is formed in the breast-shaped constriction is greater than it is in the remainder of the tubular zone.

4,271,299

PROCESS FOR THE PRODUCTION OF 2-ALKOXY-4,6-DICHLORO-S-TRIAZINES

Klaus Hentschel, Kalmthout, Belgium, and Friedrich Bittner, Bad Soden, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,479

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850339

Int. Cl.[3] C07D *251/26*

U.S. Cl. 544—218 7 Claims

1. A process for the production of 2-alkoxy-4, 6-dichloro-s-triazine by reacting cyanuric chloride with an alcohol or alcoholate in the presence of an acid binding agent comprising spraying cyanuric chloride downwardly and outwardly at a temperature in its molten range from the upper portion of a vertical tubular zone closed at the top thereof to contact and mix with the other reactant or reactants which form a liquid layer defining said tubular zone, constricting said layer in a breast-shaped manner downwardly below the place of entry of the cyanuric chloride into the tubular zone to form a narrower discharge opening, discharging said other reactant or reactants as a spray tangentially to said layer and directed slightly upwardly in the direction of the closed top above said constriction and below the point of introduction of the cyanuric chloride and thereby forming said liquid layer along the entire tubular zone to the point of introduction of the cyanuric chloride, whereby the thickness of said layer where it is formed in the breast-shaped constriction is greater than it is in the remainder of the tubular zone.

4,271,300

METHOD FOR PRODUCING 6,7-DIMETHOXY-4-AMINO-2-[4-(2-FUROYL)-1-PIPERAZINYL] QUINAZOLINE HYDROCHLORIDE HAVING AN ANTIHYPERTENSIVE EFFECT

Erkki J. Honkanen, Helsinki; Aino K. Pippuri, Espoo; Pekka J. Kairisalo, Helsinki; Heinrich Thaler, Espoo; Maija K. Koivisto, Helsinki, and Sirpa A. Tuomi, Helsinki, all of Finland, assignors to Orion-yhtyma Oy, Finland

Filed Jan. 9, 1980, Ser. No. 110,589

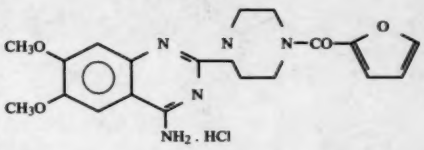
Claims priority, application Finland, Jan. 31, 1979, 790320

Int. Cl.[3] C07D *405/14*

U.S. Cl. 544—291 4 Claims

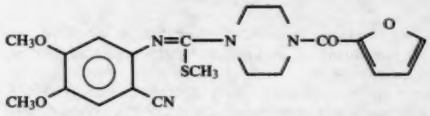
1. A method for producing 6,7-dimethoxy-4-amino-2-[4-(2-furoyl)-1-piperazinyl]quinazoline hydrochloride having an antihypertensive effect and having the formula

I



comprising reacting methyl-N-(3,4-dimethoxy-6-cyanophenyl)-[4-(2-furoyl)-1-piperazinyl]thioformamidate having the formula

II



at an elevated temperature with an excess of the stoichiometric amount of ammonium chloride in a polar solvent.

4,271,301

PREPARATION OF PIGMENTARY FORM ISOINDOLINE

Wolfgang Lotsch, Beindersheim, and Peter Hilbert, Bobenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

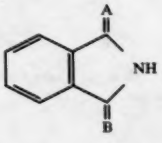
Filed Jan. 5, 1979, Ser. No. 1,272

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800815

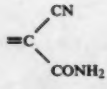
Int. Cl.[3] C09B *57/04*

U.S. Cl. 544—296 11 Claims

1. A process for the preparation of a brilliant, easily dispersible and high-hiding pigmentary form of an isoindoline pigment of the formula



wherein A is



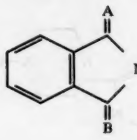
or is a substituted or unsubstituted barbituric acid radical, and B is a substituted or unsubstituted barbituric acid radical, which comprises

subjecting a suspension which consist essentially of the agglomerated crude pigment, in which the primary particles have a mean particle size of ≦0.1 μm to shearing forces in water in the presence of grinding media or in a kneader,

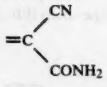
thereafter refluxing the resulting aqueous suspension at from 90° to 160° C. in the presence or absence of a surfactant for 10–30 hours, and

isolating the resulting pigment.

11. A process for the preparation of a brilliant, easily dispersible and high-hiding pigmentary form of an isoindoline pigment of the formula:



wherein A is



or is a substituted or unsubstituted barbituric acid radical, and B is a substituted or unsubstituted barbituric acid radical, which comprises:

subjecting a suspension which consists essentially of the agglomerated crude pigment, in which the primary particles have a mean particle size of ≦0.1 μm to shearing forces in water in the presence of grinding media or in a kneader,

thereafter heating the resulting aqueous suspension for from 3 to 20 hours at from 110° to 140° C. under pressure in the presence or absence of a surfactant, and

isolating the resulting pigment.

4,271,302

SUPPORTED HETERONUCLEAR NOBLE METAL CLUSTER CATALYSTS AND METHOD FOR PREPARING SAME

Gary B. McVicker, Westfield, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 924,161, Jul. 13, 1978, Pat. No. 4,217,249. This application Dec. 10, 1979, Ser. No. 101,423

Int. Cl.[3] **C07F** *15/00;* **B01J** *23/62, 23/82*

U.S. Cl. 546—2 **4 Claims**

1. A heteronuclear noble metal cluster complex of the formula:

$$(\text{pyridine})_2\text{Pt}[\text{Ir}_6(\text{CO})_{15}]$$

which exhibits the following characteristic infrared pattern (cm^{-1}) in THF solution:

2044 m
2022 sh
2011 vs
1987 sh
1975 vs
1785 m
1733 m.

2. A heteronuclear noble metal carbonyl cluster complex of the formula:

$$(\text{pyridine})_2\text{Pt}[\text{IR}_2(\text{CO})_7]$$

which exhibits the following characteristic infrared pattern (cm^{-1}) in THF solution:

2035 sh
2009 sh
1983 vs
1938 sh
1785 sh
1732 m-s.

3. A heteronuclear noble metal carbonyl cluster complex of the formula:

$$(\text{pyridine})_2\text{Pt}[\text{Rh}(\text{CO})_2(\text{P}(\text{C}_6\text{H}_5)_3)_2]_2.$$

4. A heteronuclear noble metal carbonyl cluster complex of the formula:

$$(\text{pyridine})_3\text{Pt}[\text{Ru}_3(\text{CO})_{12}]$$

which exhibits the following characteristic infrared pattern (cm^{-1}) in THF solution:

2050 sh
1999 vs
1977 sh
1962 sh
1945 m
1804 vw, br
1763 w.

4,271,303

HETEROCYCLIC COMPOUNDS

Christos Vamvakaris, Kallstadt; Peter Neumann, Wiesloch, and Manfred Patsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

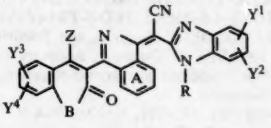
Filed Jul. 19, 1979, Ser. No. 58,838

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831673

Int. Cl.[3] **C09B** *57/04*

U.S. Cl. 546—155 **2 Claims**

1. A heterocyclic compound which in one of the possible tautomeric forms corresponds to the formula (I):



(I)

where (a) B is oxygen, sulfur, NH or

(b) R is C_1–C_8-alkyl which may or may not be interrupted by oxygen and is unsubstituted or substituted by hydroxyl, phenoxy, cyano, C_1–C_4-alkoxycarbonyl, hydroxycarbonyl, C_1–C_4-alkanoyloxy, —$CONH_2$, —$CONHCH_3$, —$CONHC_2H_5$, —$CONHC_3H_7$ or phenyl; or

is phenyl which is unsubstituted or substituted by chlorine, bromine, methyl, ethyl, methoxy or ethoxy; or

is C_1–C_4-alkoxycarbonyl or cyano; or

is —$CONH_2$, $CONHCH_3$, —$CONHC_2H_5$, —$CONHC_4H_9$ or $CONHC_6H_5$; or

if B is sulfur, NH or

may also be hydrogen,

(c) R^1 is C_1–C_4-alkyl or benzyl;

(d) Y^1 is hydrogen, chlorine, bromine, C_1–C_4-alkyl, methoxy, ethoxy, phenoxy, phenyl, nitro or SO_2T;

(e) T is hydroxyl or C_1–C_4-alkoxy; or is phenoxy which is unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkyl, methoxy or ethoxy; or

is NH_2, $NHCH_3$, NHC_2H_5, NHC_3H_7, NHC_4H_9, NHC_6H_{13}, $N(C_2H_5)_2$, $N(C_4H_9)_2$, $NHCHCH_2OCH_3$, $NHC_2H_4OC_2H_5$, $NH(CH_2)_3OC_2H_5$, $NH(CH_2)_3N(CH_3)_2$, $NH(CH_2)_3N(C_4H_9)_2$, $NHC_2H_4N(CH_3)_2$, NHC_6H_5, CH_3, C_2H_5, C_4H_9, C_6H_5, $C_6H_4CH_3$, CH_2CH_2OH, $CH_2CH_2OCH_3$, $CH_2CH_2N(CH_3)_2$, $CH_2CH(OH)CH_2Cl$ or $CH_2CH(OH)CH_2OH$;

(f) Y^2 is hydrogen, chlorine, bromine, C_1–C_4-alkyl, methoxy or ethoxy;

(g) Y^3 is hydrogen, chlorine, bromine, C_1–C_4-alkyl, hydroxyl, methoxy or ethoxy,

(h) Y^4 hydrogen, chlorine, bromine, C_1–C_4-alkyl, methoxy, ethoxy, hydroxyl, phenoxy, phenyl, or Y^3 and Y^4 together are a fused benzo ring;

(i) Z is hydroxyl, amino or —NHR^1; and the ring A may additionally be monosubstituted or polysubstituted by chlorine, bromine, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, phenoxy, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, formylamino, acetylamino, propionylamino, benzoylamino, chlorobenzoylamino, methylbenzoylamino, methylchlorobenzoylamino or phenyl.

4,271,304

PYRIDINE DERIVATIVES

Edwin T. Edington, Cookham, and Alan C. White, Windsor, both of England, assignors to John Wyeth & Brother, Ltd., Taplow, England

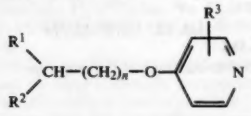
Filed May 9, 1979, Ser. No. 37,594

Claims priority, application United Kingdom, May 30, 1978, 24123/78

Int. Cl.³ C07D *213/68, 213/89*

U.S. Cl. 546—290 **6 Claims**

1. A compound selected from those having the formula



and their N-oxides and pharmaceutically acceptable acid addition salts, wherein R^1 and R^2 are independently selected from unsubstituted phenyl and naphthyl and phenyl and naphthyl substituted by one to two substituents selected from halogen, lower alkyl, lower alkoxy, lower alkylenedioxy and trifluoromethyl, excluding sterically impossible embodiments thereof; R^3 is selected from hydrogen and lower alkyl and n is selected from 0, 1 and 2.

4,271,305

THIAZOLINOAZETIDINONES AND PROCESS THEREFOR

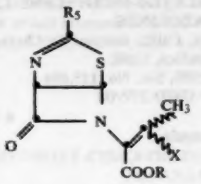
Lowell D. Hatfield, Bargersville; Larry C. Blaszczak, and Jack W. Fisher, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 8,647, Feb. 1, 1979. This application Dec. 14, 1979, Ser. No. 103,813

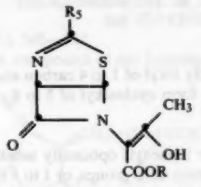
Int. Cl.³ C07D *277/60*

U.S. Cl. 548—153 **20 Claims**

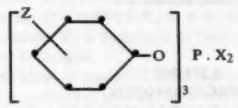
1. The process for preparing a compound of the formula



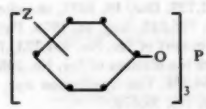
which comprises reacting a compound of the formula



with about 1.0 to about 1.3 equivalents of a halogenating compound of the formula



which is the kinetically controlled product of the reaction, in a substantially anhydrous inert organic solvent, of equivalent amounts of a triaryl phosphite of the formula



and chlorine or bromine,

in a substantially anhydrous inert organic solvent at a temperature below about 30° C. wherein in the above formulas

X is Cl or Br;

Z is hydrogen, halo, C_1–C_4 alkyl or C_1–C_4 alkoxy;

R is carboxylic acid protecting group;

R_5 is

(a) hydrogen, C_1–C_4 alkyl or halo(C_1–C_4 alkyl);

(b) a group R_6 wherein R_6 is phenyl or phenyl substituted by 1 or 2 groups selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, protected hydroxy, carbamyl, trifluoromethyl and methanesulfonamido;

(c) a group of the formula

$R_6(O)_mCH_2$—

wherein m is 1 or 0 and R_6 is defined above;

(d) a group of the formula

$R_{6a}CH_2$—

wherein R_{6a} is cyclohexadienyl, 2-furyl, 2-thienyl, or 3-thienyl; or

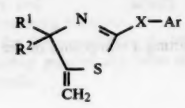
(e) a group of the formula —COOR wherein R is as defined above.

4,271,306
2-ARYLTHIO-4,4-DIALKYL-5-METHYLENE-1,3-THIAZOLINES

Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 28, 1980, Ser. No. 115,654
Int. Cl.³ C07D 277/08
U.S. Cl. 548—182 **4 Claims**

1. A compound of the formula



(I)

wherein

R^1 and R^2 are independently alkyl of 1 to 4 carbon atoms or R^1 and R^2 are joined to form cycloalkyl of 5 to 8 carbon atoms;

X is sulfur;

Ar is phenyl, naphthyl or biphenyl, optionally substituted with 1 to 5 halo groups, two nitro groups, or 1 to 5 haloalkyl groups of 1 to 3 carbon atoms and 1 to 7 halogen atoms.

4,271,307
BICHROMOPHORIC BENZOTRIAZOLE-BENZOXAZOLE ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

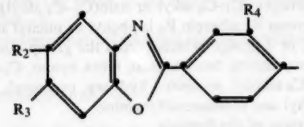
Gether Irick, Jr.; Charles A. Kelly, both of Kingsport, and James C. Martin, Johnson City, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 861,739, Dec. 19, 1977, abandoned, which is a division of Ser. No. 715,015, Aug. 16, 1976, Pat. No. 4,076,687, and a continuation-in-part of Ser. No. 484,723, Jul. 1, 1974, Pat. No. 3,988,295, which is a division of Ser. No. 298,040, Oct. 16, 1972, Pat. No. 3,864,354. This application Apr. 16, 1979, Ser. No. 30,670
Int. Cl.³ C07D 413/10
U.S. Cl. 548—224 **22 Claims**

1. A compound having the formula:

A—B—C

wherein A is a group having the structure

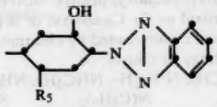


wherein

R_2 is a member of the group consisting of hydrogen, methyl, chloro and methoxy; R_3 is a member of the group consisting of hydrogen, chloro, methyl and cyclohexyl; and R_4 is a member of the group consisting of hydrogen, chloro or methyl;

wherein B is oxyethyleneoxy, oxyisopropyleneoxy, oxy, carbonyloxy, carbonyloxyisopropyleneoxy, methyleneoxy, oxymethylene, oxymethylene phenylmethyleneoxy, and thio; and

wherein C is a group having the formula



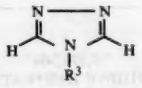
wherein R_5 is a member of the group consisting of hydrogen, methoxy, chloro, methyl, tertiary butyl, and phenyl.

4,271,308
4-ALKYL-1,2,4-4H-TRIAZOLE DERIVATIVES

Michael C. Seidel, Chalfont, Pa.; William C. von Meyer, Charlotte, N.C., and Stanley A. Greenfield, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 924,467, Jul. 14, 1978, which is a continuation-in-part of Ser. No. 267,766, Jun. 30, 1972, Pat. No. 4,120,864, which is a continuation-in-part of Ser. No. 67,198, Aug. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 847,481, Jul. 3, 1969, Pat. No. 3,701,784, which is a continuation-in-part of Ser. No. 757,490, Sep. 4, 1968, Pat. No. 3,769,411. This application Jun. 14, 1979, Ser. No. 48,426
Int. Cl.³ A01N 43/64; C07D 249/08
U.S. Cl. 548—262 **6 Claims**

1. A compound of the formula:



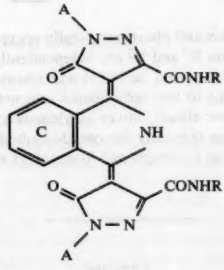
wherein R^3 is selected from the group consisting of n-pentyl, n-hexyl, n-octyl, n-decyl and n-dodecyl.

4,271,309
ISOINDOLINE COLORANTS

Wolfgang Lotsch, Beindersheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 4, 1980, Ser. No. 127,145
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909567
Int. Cl.³ C07D 401/14
U.S. Cl. 548—364 **4 Claims**

1. An isoindoline colorant of the formula:



where

A is hydrogen or phenyl; and

R is hydrogen, C_1–C_4-alkyl or phenyl; and

the phenyl radicals in A and R and the ring C, independently of one another, do not carry further substituents or are substituted by groups which do not confer solubility selected from the group consisting of chlorine, bromine, carbamyl, sulfamyl, C_2–C_4-alkanoylamino and benzoylamino; and

the two A's being identical or different.

4,271,310
METHOD OF DETERMINING CHOLINESTERASE ACTIVITY AND CHOLINE DERIVATIVES FOR USE IN THE METHOD

Katsuyuki Watanabe, Tokyo; Tadatoshi Hayashi, Machida, both of Japan; Hiroaki Hayashi, deceased, late of Saitama, Japan; by Atsuko Hayashi, heir; by Yuko Hayashi, heir, both of Wako, Japan; Toshio Tatano, Numazu, and Yoshiaki Shmizu, Shizuoka, both of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

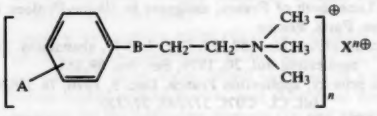
Filed Apr. 12, 1979, Ser. No. 29,517

Claims priority, application Japan, Apr. 17, 1978, 53-44122; Apr. 17, 1978, 53-45097

Int. Cl.³ C07C *69/88, 69/76*

U.S. Cl. 560—71 **21 Claims**

1. A method of determining cholinesterase activity which comprises reacting the cholinesterase with a compound of the formula:



I

(wherein A represents a hydrogen atom or a C_{1-5} alkyl or alkoxy group and B represents a group of the formula —R—COO— (in which —R— represents an alkenyl group with 2 to 6 carbon atoms); or A represents a hydroxy group in either or both o-positions of the benzene ring or a C_{1-5} alkyl group and B represents a group of the formula —COO—; X represents a stabilising anion and n represents the charge on the anion) and determining the cholinesterase activity by means of the choline and/or acid thereby obtained by titrometric or calorimetric techniques.

4,271,311
ESTERIFICATION OF PHENOL CATALYZED WITH A STRONG BASE PLUS BORON

William W. Knickmeyer, Aurora; James Spanswick, Wheaton, and James R. Stephens, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 13, 1979, Ser. No. 57,198

Int. Cl.³ C07C *69/773, 69/355, 69/035*

U.S. Cl. 560—86 **8 Claims**

1. The process of esterification of phenolic compounds which comprises reacting a phenolic compound and an aromatic carboxylic acid using a catalyst consisting essentially of an alkali metal compound and a boron compound wherein said alkali metal compound is at least one member selected from the group consisting of alkali metal salts of boric acid, alkali metal polyborates, alkali metal hydroxides, and alkali metal borohydrides and said boron compound is at least one member selected from the group consisting of boric acid, boric anhydride, alkali metal polyborates, alkali metal salts of boric acid and alkali metal borohydrides.

4,271,312
SUPPRESSION OF DIGLYCOL ETHER ESTER IN CHROMIUM (III) CATALYZED ETHYLENE OXIDE REACTION WITH AROMATIC CARBOXYLIC ACIDS

Wilford J. Zimmerschied, and Delbert H. Meyer, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 7, 1971, Ser. No. 132,206

Int. Cl.³ C07C *67/26*

U.S. Cl. 560—93 **5 Claims**

1. A process for the preparation of 2-hydroxyethyl esters of aromatic carboxylic acids which comprises reacting at a temperature in the range of 100° to 160° C. substantially equivalent proportions of an aromatic carboxylic acid and ethylene oxide or 1,2-propylene oxide in the presence of chromium (III) octanoate and triethylamine, wherein chromium octanoate is present in an amount in the range from 0.5 to 2% based on the weight of said aromatic acid and triethylamine is present in the range from 50 to 100% of the weight of the chromium octanoate.

4,271,313
19-HYDROXY-CIS-4,5-DIDEHYDRO-13,14-DIHYDRO-PG_1 ANALOGS

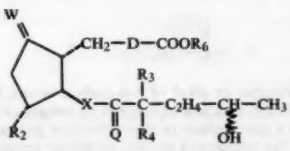
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104. This application Oct. 26, 1979, Ser. No. 88,748

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—121 **2 Claims**

1. A compound of the formula



wherein D is cis-CH_2-CH=CH-CH_2-CH_2-,

wherein Q is α-OH:β-R_5 or α-R_5:β-OH,

wherein R_5 is hydrogen or methyl, wherein R_6 is

(a) hydrogen,

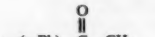
(b) alkyl of one to 12 carbon atoms, inclusive,

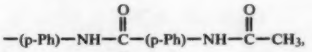
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

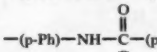
(d) aralkyl of 7 to 12 carbon atoms, inclusive,

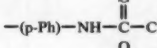
(e) phenyl,

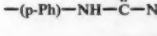
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;

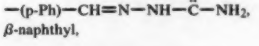
(g) 

(h) 

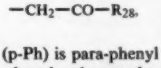
(i) 

(j) 

(k) 

(l) 

(m) β-naphthyl,

(n) 

wherein (p-Ph) is para-phenyl or inter-para-phenylene, and R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

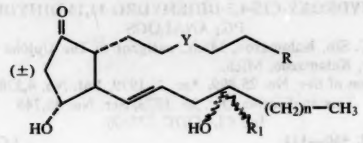
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and wherein X is —CH_2CH_2—; with the proviso that R_6 is not H or alkyl of one to 12 carbon atoms, inclusive, when: R_2 is hydroxy, R_3 and R_4 are hydrogen, Q is α-OH:β-H; W is oxo or α-OH:β-H.

4,271,314
4,5-UNSATURATED PROSTANOIC ACID DERIVATIVES

Paul W. Collins, Deerfield, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Nov. 28, 1979, Ser. No. 98,290
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 7 Claims

1. A compound of the formula



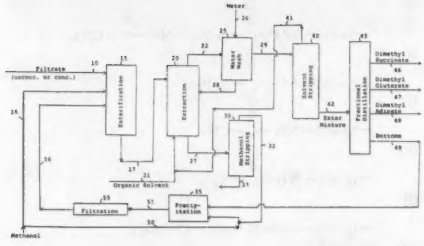
wherein R is

wherein R′ is hydrogen or alkyl of 1–6 carbon atoms; R_1 is hydrogen or alkyl of 1–6 carbon atoms; n is an integer of from 2 through 4; Y is a cis-vinylene or trans-vinylene group; and the (+) refers to the compound shown, its mirror image and the mixture of racemates.

4,271,315
TREATMENT OF WASTE STREAM FROM ADIPIC ACID MANUFACTURE

Norbert F. Cywinski, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed Nov. 15, 1979, Ser. No. 94,427
Int. Cl.[3] B01D *3/34*; C07C *67/00*
U.S. Cl. 560—204 13 Claims



1. In a process for producing methyl esters of C_4–C_6 carboxylic acid components contained in an aqueous filtrate, which filtrate is a waste byproduct stream derived from the production of adipic acid by nitric acid oxidation of cyclohexanone/-cyclohexanol, wherein the said process comprises the steps of admixing the filtrate byproduct stream with methanol and heating the admixture to form methyl esters of the C_4–C_6 carboxylic acid components, extracting the methyl ester components by contacting the esterification medium with a water-immiscible organic solvent, and separating the immiscible organic solvent phase and aqueous phase, the improvement which comprises (1) distilling the said organic solvent phase to yield dimethyl esters of succinic acid, glutaric acid and adipic acid, and a residual bottoms fraction; (2) admixing the said bottoms fraction with methanol to dissolve C_4–C_6 carboxylic acids and methyl esters and to precipitate heavy organic components which are methanol-insoluble; and (3) separating the methanol solution phase and recycling it to the esterification step of the process.

4,271,316
PROCESS FOR THE CONTINUOUS REARRANGEMENT OF ALKALI METAL SALTS OF AROMATIC CARBOXYLIC ACIDS

Jean-Claude Choulet, Meyzieu, and Jacques Nouvel, Tassin la Demi-Lune, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 858,274, Dec. 7, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 59,383
Claims priority, application France, Dec. 9, 1976, 76 37838
Int. Cl.[3] C07C *51/347, 51/353*
U.S. Cl. 562—480 17 Claims

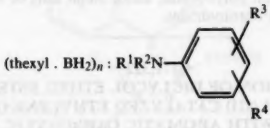
1. A process for the continuous rearrangement of an alkali metal salt of an aromatic carboxylic acid comprising continuously introducing a suspension of an alkali metal salt of an aromatic carboxylic acid in an inert organic diluent into a reaction zone via a feeding circuit comprising a feeding device including means for preheating the suspension, under an atmosphere of carbon dioxide, said carbon dioxide being introduced at a point in the feeding circuit where the temperature is lower than the temperature required to initiate the rearrangement reaction.

4,271,317
ALKYLBORANE COMPLEXES

Andrew Pelter, Swansea, Wales, and David J. Ryder, Chesham, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 31, 1979, Ser. No. 90,085
Claims priority, application United Kingdom, Nov. 7, 1978, 44265/78
Int. Cl.[3] C07C *87/28*
U.S. Cl. 564—8 9 Claims

1. A complex of the formula:



I

wherein R^1 and R^2 are the same or different (1-4C)-alkyl radicals, or together with the adjacent nitrogen atom constitute a morpholino, piperidino or pyrrolidino radical; R^3 and R^4 are independently selected from hydrogen, (1-4C)-alkyl, (1-4C)-alkoxy, di-(1-4C)-alkylamino, morpholino, piperidino and pyrrolidino radicals; thexyl is a 1,1,2-trimethylpropyl radical; and n is the integer 1 when R^3 and R^4 are other than nitrogen containing radicals, or the integer 1 or 2 when one of R^3 and R^4 is a nitrogen containing radical, or the integer 1, 2 or 3 when both R^3 and R^4 are nitrogen containing radicals.

4,271,318

PROCESS FOR PREPARING AMINO SCHIFF BASE OR CORRESPONDING DIAMINO KETONE

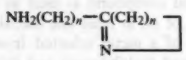
Tsutomu Setsuda, Ogaki; Hideyuki Aizawa, Aichi, and Takeshi Kimura, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 79,830
Int. Cl.[3] C07C *85/12, 85/147, 85/153, 85/20*
U.S. Cl. 564—468 11 Claims

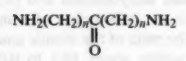
1. In a process for preparing an amino Schiff base, from a starting material selected from the group consisting of ω-lactams having chain lengths of about 4–12 carbon atoms, oligomers thereof, ring-opened polymers thereof and ω-amino carboxylic acids corresponding thereto, the steps which comprise:

(a) heating said starting material with water and a carbonate of a metal selected from the group consisting of lithium, calcium and barium in a reaction container heated at a temperature of about 60°–350° C. and discharging carbon dioxide produced, thereby preparing a metal salt of an ω-amino carboxylic acid,

(b) heating the resulting metal salt of said ω-amino carboxylic acid at a temperature of about 250°–550° C., thereby converting it to an amino Schiff base and/or a diamino ketone corresponding thereto, said Schiff base being represented by the following formula (I), and the diamino ketone being represented by the formula (II)



(I)



(II)

wherein n is an integer from 3–11, and also producing a carbonate compound of a metal selected from the group consisting of lithium, calcium and barium, and

(c) recycling the metal carbonate compound produced in said heating step (b) to said heating step (a) for further use.

4,271,319

PHENYL BETA-CHLORO-ALPHA-HYDROXY-BETA-(3-TRIFLUOROMETHYLPHENYL)ETHYL KETONE AND PROCESS FOR ITS PRODUCTION

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 14, 1979, Ser. No. 38,764
Int. Cl.[3] C07C *45/58, 49/245*
U.S. Cl. 568—312 5 Claims

1. Phenyl beta-chloro-alpha-hydroxy-beta-(3-trifluoromethylphenyl)ethyl ketone.

2. The process of producing phenyl beta-chloro-alpha-hydroxy-beta-(3-trifluoromethylphenyl)ethyl ketone which comprises the steps of:

(a) condensing 3-trifluoromethylbenzaldehyde with acetophenone under basic conditions to produce a substituted chalcone, phenyl (3-trifluoromethyl)-alpha-styryl ketone,

(b) epoxidizing said substituted chalcone by reaction with hydrogen peroxide under basic conditions to produce the corresponding epoxide, phenyl alpha, beta-epoxy-beta-(3-trifluoromethylphenyl)ethyl ketone, and

(c) reacting said epoxide with stannic chloride or hydrogen chloride to form a chlorohydrin, phenyl beta-chloro-alpha-hydroxy-beta-(3-trifluoromethylphenyl)ethyl ketone.

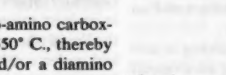
4,271,320

PROCESS FOR PRODUCING A HIGHER CARBONYL COMPOUND

Yasuo Tokitoh; Noriaki Yoshimura, and Masuhiko Tamura, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 31, 1979, Ser. No. 71,670
Claims priority, application Japan, Sep. 5, 1978, 53-109237; Sep. 5, 1978, 53-109238
Int. Cl.[3] C07C *45/34, 45/36, 29/136, 29/14, 45/27*
U.S. Cl. 568—426 13 Claims

1. A process for producing a carbonyl compound which comprises: oxidizing under aqueous Wacker oxidation conditions a monoolefinic hydrocarbon or a non-conjugated diolefinic hydrocarbon having 6 to 25 carbon atoms in an aqueous medium containing palladium or a salt thereof as a catalyst and a copper salt as a redox promoter in the presence of a water-soluble polyoxyalkylene compound of the formula



(I)

wherein

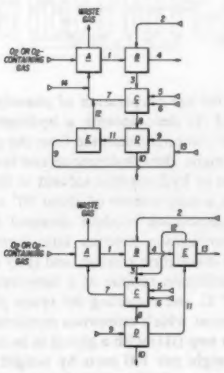
each of R^1 and R^2 represents either a hydrogen atom or a hydrocarbon radical having 1 to 8 carbon atoms; m is an integer greater than zero and n is zero or an integer greater than zero, such that $m+n \geqq 4$ and $m > 3$ n, said polyoxyalkylene compound being used in a proportion of about ¼ to about 3 parts by weight per one part by weight of water in the reaction system; and recovering a carbonyl compound corresponding in number of carbon atoms to the starting olefinic hydrocarbon.

4,271,321

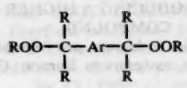
PROCESS FOR THE PREPARATION OF ARALIPHATIC DIHYDROPEROXIDES

Heinz W. Voges, Dorsten, Fed. Rep. of Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,661
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843857
Int. Cl.[3] C07C *179/047*
U.S. Cl. 568—569 12 Claims



1. In a process for the preparation of araliphatic dihydroperoxides of the formula:



(I)

wherein Ar is benzene and R is hydrogen or a C_1–C_4 alkyl, the process comprising the steps of:

(1) oxidizing a hydrocarbon of the formula:

(II)

with oxygen or an oxygen-containing gas;

(2) extracting the resulting dihydroperoxide of formula (I) with an alkali metal hydroxide solution of a concentration of 1–12%, thereby producing an aqueous extract and an organic raffinate;

(3) neutralizing any alkali metal hydroxide remaining in said organic raffinate with CO_2 thereby producing alkali metal carbonate or bicarbonate in said raffinate; and

(4) washing the alkali metal carbonate or bicarbonate remaining in said raffinate with wash-water, the improvement which comprises:

(5) extracting from the wash water used in step (4) any dissolved hydroperoxides reamining therein with a hydrocarbon solvent.

4,271,322

PROCESS FOR PREPARATION OF PHENOLS

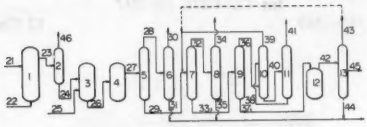
Fujihisa Matsunaga, and Hirohiko Nambu, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,214

Claims priority, application Japan, Jan. 11, 1979, 54-1012

Int. Cl.³ C07C *37/08, 37/74*

U.S. Cl. 568—798 **6 Claims**



1. In a process for the preparation of phenols which comprises the steps of (I) decomposing a hydroperoxide of an isopropyl aromatic compound selected from the group consisting of cumene, cymene, dimethylcumene and isopropyl naphthalene in a ketone or hydrocarbon solvent in the presence of an acid catalyst at a temperature of about 50° to 80° C., (II) distilling the decomposition product obtained in step (I) to separate the decomposition product into acetone, phenols, hydrocarbons and distillation residue, and (III) thermally decomposing the distillation residue at a temperature of about 200° to about 300° C. and recycling the crude phenol to step (II), the improvement which comprises contacting the crude phenol obtained in step (III) with a glycol in an amount of 100 to 300 parts by weight per 100 parts by weight of the crude phenol at a temperature of 10° to 100° C. to separate the crude phenol into an upper hydrocarbon layer and a lower extract layer comprising the glycol and phenol, and recycling the phenol in said extract layer to step (II).

4,271,323

PROCESS FOR HYDROGENATING UNSATURATED COMPOUNDS

Daniel Durand, Rueil-Malmaison; Gerard Hillion, Franconville; Christian Lassau, Villepreux, and Lucien Sajus, Croissy sur Seine, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 467,900, May 8, 1974, abandoned. This application Oct. 10, 1975, Ser. No. 621,416

Claims priority, application France, May 8, 1973, 73 16619; Jul. 13, 1973, 73 25933; Nov. 5, 1973, 73 39290

Int. Cl.³ C07C *5/10, 5/02, 85/12, 29/19*

U.S. Cl. 568—816 **21 Claims**

1. In a process for hydrogenating an hydrogenizable compound having an unsaturated hydrogenatable bond, said compound being an aromatic hydrocarbon, a saturated aldehyde, an unsaturated aldehyde, an unsaturated alcohol, an unsaturated ether, a saturated nitrile, an unsaturated nitrile, an unsaturated amine, a phenol, a polyolefinic hydrocarbon, or vinylacetylene by means of hydrogen, in the homogeneous liquid phase in an inert solvent or in the compound to be hydrogenated in the liquid phase, under hydrogenation conditions at 0°–300° C. and under a pressure of 0.1 to 100 bars, in the presence of a hydrogenation catalyst, said catalyst being soluble in heptane in catalytic quantities and obtained by reacting a metal compound with a reducing agent of the formula $Al\ R_3$ wherein each R is an alkyl group of 1–12 carbon atoms, the improvement wherein said metal compound is used as a mixture in synergistic proportions, of (a) at least one alkoxide, acetylacetonate or carboxylate of a metal selected from iron, zinc, zirconium, manganese and molybdenum and (b) at least one alkoxide, acetylacetonate or carboxylate of a metal selected from nickel and cobalt, the ratio of the atomic amount of metal (a) to metal (b) being within about 10:1 to 0.01:1, and the process being conducted under such conditions that the rate of hydrogenation is disproportionately higher compared to the use of (a) or (b) compound taken alone.

4,271,324

2,6,6-TRIMETHYL-α-(ISO)PROPENYL-1,3-CYCLOHEXADIENE-1-METHANOLS

Richard A. Wilson, Westfield; William L. Schreiber, Jackson; Braja D. Mookherjee, Holmdel, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, N.J.; Manfred H. Vock, Locust, N.J.; Gilbert Stork, Englewood, N.J., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

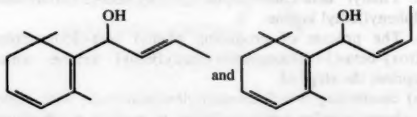
Division of Ser. No. 39,361, May 15, 1979. This application Feb. 8, 1980, Ser. No. 119,804

Int. Cl.³ C07C *33/14*

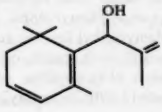
U.S. Cl. 568—824 **3 Claims**

1. A 2,6,6-trimethyl-alpha-propenyl-1,3-cyclohexadiene-1-methanol substance selected from the group consisting of:

(a) a mixture of compounds having the structures:



(b) a compound having the structure:



4,271,325

PROCESS FOR THE MANUFACTURE OF 1,1-DIHALO-4-METHYL-1,3-PENTADIENES

Harold M. Pitt, Lafayette, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 742,801, Nov. 18, 1976, abandoned.
This application Jan. 9, 1978, Ser. No. 867,866
Int. Cl.[3] C07C *21/19*
U.S. Cl. 570—228 7 Claims

1. A process for the manufacture of a 1,1-dichloro-4-methyl-1,3-pentadiene which comprises contacting a 1,1,1,3-tetrachloro-4-methylpentane in the liquid phase with a catalytic amount of liquid stannic chloride at a temperature between about 120° C. and about 200° C., and recovering the product therefrom.

4,271,326

METHOD OF PROCESSING ORGANIC WASTE INTO USEFUL PRODUCTS

Ronald M. Mego, P.O. Box 325, Leechburg, Pa. 15656

Filed Sep. 24, 1979, Ser. No. 77,908
Int. Cl.[3] C07C *4/00*
U.S. Cl. 585—240 14 Claims

1. A method of treating organic waste comprising:

A. slurrying the organic waste in water with a member selected from the group consisting of ammonium nitrate and ammonium nitrite;

B. heating the slurry;

C. distilling volatile hydrocarbons from the heated mixture;

D. collecting the volatile hydrocarbons; and

E. recovering the residue from the distillation.

4,271,327

DEHYDROGENATION OF CYCLOHEXANES

Toshio Ishikawa, Tokyo; Shuichi Niwa, Komae; Shoko Yamadaya, Tokyo, and Yoshio Orito, Musashino, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Division of Ser. No. 20,181, Mar. 13, 1979, Pat. No. 4,221,678.
This application Mar. 5, 1980, Ser. No. 127,381
Claims priority, application Japan, Sep. 27, 1978, 53-118761
Int. Cl.[3] C07C *5/41*
U.S. Cl. 585—440 2 Claims

1. A method for dehydrogenation of cyclohexane and alkyl-substituted cyclohexanes, which comprises bringing at least one compound selected from the group consisting of cyclohexane and alkyl-substituted cyclohexanes into contact with a catalyst which comprises an aluminum sponge and a noble metal of Group 8 of the Periodic Table of the Elements carried on said aluminum sponge; in conjunction with hydrogen; at temperatures of from 290° to 620° C.

4,271,328
PHOTOVOLTAIC DEVICE

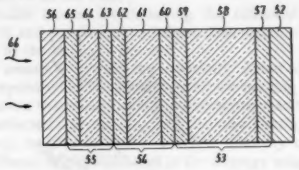
Yoshihiro Hamakawa, 17-4,MInamihanayashiki 3-chome, Kawanishi-shi, Hyogo-ken; Hiroaki Okamoto, Kobe; Yoshiteru Nitta, Osaka, and Toshio Adachi, Toyonaka, all of Japan, assignors to Yoshihiro Hamakawa, Kawanishi, Japan

Filed Mar. 14, 1980, Ser. No. 130,536

Claims priority, application Japan, Mar. 20, 1979, 54/32993

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—249 **19 Claims**



1. A photovoltaic device, comprising:

a substrate comprising an electrically conductive material, said substrate having a surface;

a plurality of photoelectric converting unit cells laminated in succession on the surface of said substrate,

each of said plurality of photoelectric converting unit cells including amorphous silicon layers comprising a p type layer, an i type layer and an n type layer; and

an electrically conductive layer formed on the one of said plurality of photoelectric converting unit cells which is furthest from the surface of said substrate,

one of said substrate and said electrically conductive layer comprising a radiation incident surface adapted for receiving radiation.

4,271,329
FUSIBLE TEXTILE DEVICE ADAPTED TO BE PLACED BETWEEN A THERMO-RETRACTIBLE ELEMENT AND ELECTRICAL CONDUCTORS OR COMPONENTS TO PROVIDE A FLUID TIGHT COUPLING

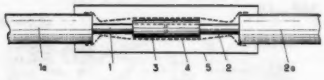
Michel Perelmuter, Paris, France, assignor to Compagnie Francaise des Isolants, France

Filed Jul. 6, 1977, Ser. No. 813,366

Claims priority, application France, Jul. 6, 1976, 76 20557

Int. Cl.³ H01R *4/70, 4/20*

U.S. Cl. 174—84 R **13 Claims**



1. A device, for interposing between electrically conductive means and a thermo-retractible protective element disposed about said electrically conductive means, to effect electrically-insulating fluid-tight connection between said thermo-retractible protective element and said electrically conductive means, said device comprising a portion of a fabric having first and second inter-engaged threads, said first and second threads each being constituted of a respective fusible synthetic resinous material which is different from that of the other of said threads, the synthetic resinous material of which said first thread is constituted being selected to undergo polymerisation or cross-linking upon the application of heating by interaction with the material of which said second thread is constituted.

11. In combination, for the production of an electrically-insulating fluid-tight protective covering about an electrically-conducting means:

(i) a protective sheath for placing about said electrically-conducting means, said sheath being made of a material selected, upon the application of heating at a predetermined temperature, to be thermo-retractible, and

(ii) a sleeve for interpositioning between said sheath and said electrically-conducting means, said sleeve being of a fabric having first and second interengaged threads, said first and second threads each being constituted of a respective fusible synthetic resinous material which is different from that of the other of said threads, the synthetic resinous material of which said first thread is constituted being selected to undergo polymerisation or cross-linking upon the application of heating at said predetermined temperature and in the presence of a catalyst, the synthetic resinous material of which said second thread is constituted being selected to provide said catalyst.

4,271,330
HEAT-RECOVERABLE ARTICLES

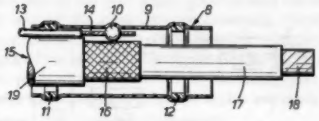
Didier J. M. Watine, Maisons-Laffitte, and Christian P. Nadal, Magny en Vexin, both of France, assignors to Raychem Pontoise S.A., Saint Ouen l'Aumone, France

Filed May 22, 1979, Ser. No. 41,388

Claims priority, application United Kingdom, May 23, 1978, 21327/78; Sep. 21, 1978, 37692/78

Int. Cl.³ H01R *4/02*

U.S. Cl. 174—84 R **40 Claims**



1. An article which comprises a heat-shrinkable sleeve open at at least one end, and a quantity of solder positioned eccentrically within the sleeve and held by the sleeve, the solder being such that it does not extend round the entire inner circumference of any cross-section of the sleeve.

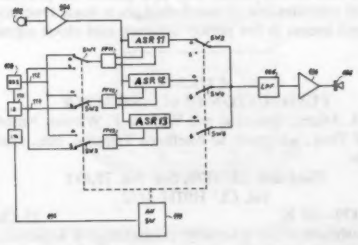
4,271,331
ANALOG PROCESSING SYSTEM FOR REAL-TIME CONVERSION OF THE FREQUENCY OF ANALOG SIGNALS

Arie Kalkstein, Herzlia, Israel, assignor to In-Mar Electronics, Tel Aviv, Israel, a part interest

Filed Jun. 27, 1979, Ser. No. 52,818

Int. Cl.³ G06F *5/06;* **H04J** *3/18*

U.S. Cl. 179—1 SH **5 Claims**



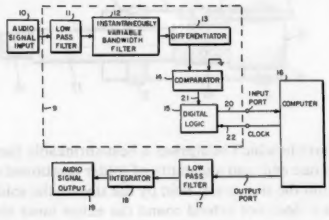
1. An analog signal processing system, comprising:

(a) three analog shift registers each capable of storing, under the control of loading clock pulses, an analog signal in the form of a plurality of analog samples, and of outputting them under the control of unloading clock pulses;
(b) a source of high-frequency clock pulses;
(c) a source of lower-frequency clock pulses;
(d) an input circuit connected to the input end of all the analog shift registers in parallel;
(e) an output circuit selectively connectable to the output ends of the analog shift registers; and
(f) cyclically operable switching means effective:
(i) during a first phase, to unload one register at the high-frequency clock pulse rate while loading a second and a third register at the low-frequency clock pulse rate.
(ii) during a second phase, to unload said second register at the high-frequency clock pulse rate, while loading said first and third registers at the low-frequency clock pulse rate; and
(iii) during a third phase, to unload said third register at the high-frequency clock pulse rate, while loading said first and second registers at the low-frequency clock pulse rate.

4,271,332
SPEECH SIGNAL A/D CONVERTER USING AN INSTANTANEOUSLY-VARIABLE BANDWIDTH FILTER

James C. Anderson, 1 Mohegan Rd., Acton, Mass. 01720

Filed Jun. 4, 1979, Ser. No. 45,282
Int. Cl.[3] G10L *1/00*
U.S. Cl. 179—1.5 A 6 Claims



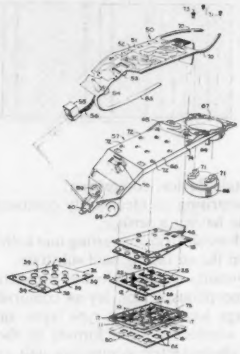
1. An audio signal digitization circuit comprising:
means for instantaneously limiting the bandwidth of said audio signal to provide a greater bandwidth for audio signals above a predetermined amplitude,
first means for providing a signal whose logic level is responsive to the polarity of the slope of the output signal from said bandwidth limiting means,
a source of clock signals,
second means for providing an approximate digital output signal whose logic level changes in response to said logic level signal from said first means and to a clock signal from said source where said first means for providing a signal provides one or more changes in logic level to said second means in the period between said clock signals.

4,271,333
PUSHBUTTON DIAL ASSEMBLY

William J. Adams, Franklin, and William F. Wernet, Nashville, both of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada

Filed Sep. 25, 1979, Ser. No. 78,692
Int. Cl.[3] H01H *3/12*
U.S. Cl. 179—90 K 15 Claims

1. A pushbutton dial assembly, comprising, in sequence and in a sandwich formation; a pushbutton member having a plurality of pushbuttons; a flexible transfer member in contact with a back surface of the pushbutton member, the transfer member having a plurality of cantilevered actuating members, one for each pushbutton, each actuating member having a domed portion extending from a back surface of the transfer member; a flexible contact member having a plurality of domed areas comprised of a plastic material extending from a front surface, each domed area of the contact member aligned with a domed portion of an actuating member and in contact therewith, each domed area having an electrically conductive surface on a back, concave surface, and electrical conductors on a back surface of the contact member connecting to said electrically conductive surfaces; a flexible electrically insulating spacer

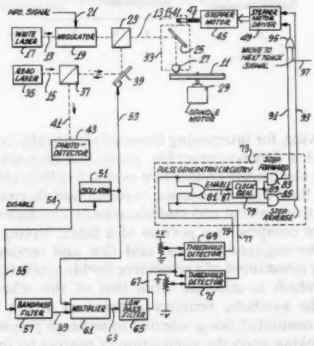


member having apertures aligned with the domed areas; and a circuit member having a plurality of contact areas, a contact area aligned with each domed area, and an electrical circuit pattern connected to said contact areas; the arrangement being such that pressure on a pushbutton depresses an actuating member, the domed portion on the actuating member pressing on and deforming the related domed area, the domed area snapping down to contact the related contact area on the circuit member.

4,271,334
APPARATUS FOR CORRECTING FOR TEMPERATURE-INDUCED TRACKING ERRORS IN A SYSTEM FOR RECOVERING INFORMATION FROM A RECORDING DISC

Raymond Yardy, Rancho Palos Verdes, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Apr. 6, 1979, Ser. No. 27,794
Int. Cl.[3] G11B *7/00*
U.S. Cl. 369—41 12 Claims



1. Tracking apparatus for aligning a beam of radiation with respect to a selected one of a plurality of substantially circular and concentrically arranged information tracks on a rotatable

information recording disc, said beam of radiation being reflected in a prescribed manner by the recording disc, to produce a reflected beam of radiation having an average intensity that varies according to the deviation of the beam of radiation from the centerline of the selected information track, said tracking apparatus comprising:

carriage means for directing the beam of radiation at the disc as the disc is rotated with respect thereto, said carriage means being controllably movable along a generally radial axis relative to the disc;

photodetector means for detecting the reflected beam of radiation and producing an information signal that corresponds to the intensity thereof;

oscillator means for producing a periodic dither signal;

means, responsive to the dither signal, for causing the beam of radiation to oscillate along an axis transverse to the axis of the selected information track, thereby causing a corresponding oscillation in the average intensity of the reflected beam of radiation and in the average magnitude of the information signal;

beam deviation sensing means for comparing the oscillation in the average magnitude of the information signal to the periodic dither signal, thereby producing an intermediate signal, said intermediate signal being indicative of both the magnitude and direction of any deviation of the beam of radiation from the centerline of the selected information track;

means for low pass filtering the intermediate signal to remove signal variations having a frequency comparable to the angular velocity of the recording disc;

control pulse signal means, responsive to the low pass filtered intermediate signal, for producing a corresponding control pulse signal; and

stepper motor means, responsive to the control pulse signal, for moving said carriage means along the generally radial axis, a prescribed plurality of steps of said stepper motor means corresponding to the spacing between adjacent information tracks, whereby the beam of radiation is positioned in substantial alignment with the centerline of the selected information track.

4,271,335

PICKUP CARTRIDGE HAVING A RESILIENT BIASING MEMBER FOR HOLDING AN ELONGATED STYLUS HOLDER AGAINST A SUPPORT SURFACE THEREOF

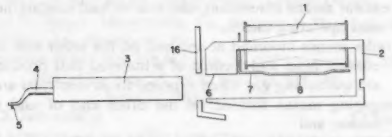
Keniti Okura, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 3, 1978, Ser. No. 930,650

Claims priority, application Japan, Aug. 3, 1977, 52-92482; Sep. 16, 1977, 52-110455

Int. Cl.³ H04R *11/12*

U.S. Cl. 369—136 **6 Claims**



1. A pickup cartridge comprising a stylus assembly having a stylus, a cantilever carrying the stylus on an end portion thereof, and an elongated holder for resiliently holding said cantilever; a cartridge body case of magnetic material, said cartridge body case having an opening for the insertion of the elongated holder therethrough; pole piece means positioned inside of said cartridge body case, said pole piece means having at least two coils wound therearound and leg portions to pick up a signal and transmit the signal to the coils and to define a socket space of substantially a square cross-section, said socket space being in alignment with the opening in the cartridge body case to receive the inserted elongated holder therein; a base member of non-magnetic and non-conductive material, said base member being adapted to rigidly support the pole piece means in position in the cartridge body case; and resilient support means of electro-conductive non-magnetic material, said resilient support means being rigidly supported by the base member within the cartridge body case and projecting into said socket space to support the inserted elongated holder of the stylus assembly and wherein the resilient support means is grounded.

6. In a pickup cartridge comprising a stylus assembly having a cantilever carrying a stylus on its one end portion, and an elongated holder for holding said cantilever at its other end portion; a cartridge including an L-shaped base member consisting of a horizontal section and a vertical section, said vertical section having an aperture at a lower portion where the horizontal section and the vertical section intersect, said horizontal section having a V-shaped groove at its center line portion extending from said aperture, said V-shaped groove defining a socket space and having guide grooves in both slopes thereof; a pair of first pole pieces extending substantially in parallel with the horizontal section and each first pole piece having one end fixed in the vertical section; a pair of coils engaged around the first pole pieces; a pair of second pole pieces, each pole piece being U-shaped and having one leg inserted into one of the two guide grooves and the other leg inserted in one of the coils: the improvement wherein said cartridge is provided with a resilient member extending for the whole length of the holder socket space and having at least one lug portion protruding downward to resiliently press the inserted holder for securing a fit of the stylus assembly.

4,271,336

ELECTRICAL SLIP RING AND BRUSH RING ASSEMBLY

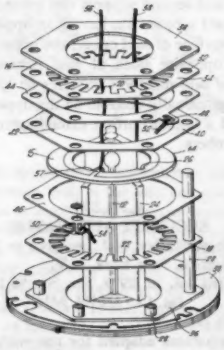
Arie Shitrai, Raanana, Israel, assignor to Israel Aircraft Industries Limited, Ben Gurion International Airport, Israel

Filed Jan. 24, 1979, Ser. No. 6,246

Claims priority, application Israel, Jan. 30, 1978, 53913

Int. Cl.³ H01H *19/00*

U.S. Cl. 200—24 **10 Claims**



1. An electrical current transfer assembly including a slip ring and a brush ring havng an annular array of contact elements engaging the slip ring as one ring rotates with respect to the other, characterized in that said brush ring is divided into a plurality of equal sectors each carrying a group of the contact elements, the contact elements being interlaced with respect to

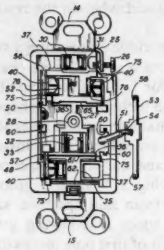
length among the plurality of groups to provide a distributed balance engagement of the contact elements with the slip ring.

4,271,337

SAFETY RECEPTACLE

Emanuel E. Barkas, Hamden, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Sep. 17, 1979, Ser. No. 76,245
Int. Cl.³ H01R *33/30*
U.S. Cl. 200—51.09 **6 Claims**



1. An improved electrical receptacle of the type having a housing, at least two electrically conductive female elements supported in said housing for receiving and making electrical contact with blades of a cooperating plug, a cover for said housing having openings therethrough aligned with said elements, first and second conductor means for electrically connecting each of said elements to a source of electrical power, first and second normally open switches, each of said switches being in series circuit relationship between one of said elements and one of said conductor means, first and second independently movable operating members each having a portion lying in a plane between said cover and said female elements, each of said members being elongated, electrically nonconductive and substantially rigid, each of said portion having a cam surface between one of said elements and its aligned cover opening so that a body inserted through one of said openings contacts a cam surface on one of said members and moves said member to close the one of said switches associated with the element aligned with the other opening before the body contacts the element behind said one opening, said housing including, first and second support ribs extending toward said cover, each of said support ribs having an upper surface spaced from the inner surface of said cover, the upper surfaces of said ribs being on opposite sides of said female elements, and wherein each of said members includes an elongated portion resting and longitudinally slidable on the upper surface of one of said ribs and a lateral portion extending toward the other one of said members.

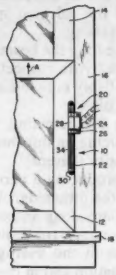
4,271,338

SECURITY APPARATUS

William J. Rakocy, Nutley, N.J., assignor to North American Philips Corporation, New York, N.Y.

Filed Jul. 10, 1979, Ser. No. 56,168
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.71 **9 Claims**

1. Security apparatus adapted for use with a slidable-type window or the like, which comprises a two-part electrical contact switch, one of said switch parts being electrically connectible to an alarm system; means to attach said one switch part to the molding surrounding a window frame; a linearly extending bracket; and means to attach said bracket on the window frame so that the bracket is adjacent said one switch part, said second switch part being mounted on said bracket so as to be slidable with respect thereto, whereby the window frame can be slid open or slid closed, without activation of the alarm system, by holding the two switch parts in electrical contact with each other.

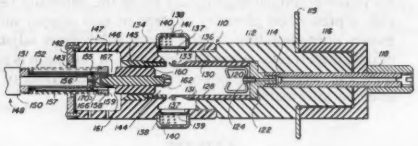


4,271,339

HIGH VOLTAGE CIRCUIT SWITCH ARRANGEMENT

Otto Meister, Arlington Heights, and Thomas J. Tobin, Morton Grove, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Continuation of Ser. No. 693,290, Jun. 7, 1976, abandoned. This application Nov. 23, 1977, Ser. No. 854,125
Int. Cl.³ H01H *33/08*
U.S. Cl. 200—144 C **24 Claims**



1. A high voltage circuit interrupting switch arrangement for initiating and interrupting current flow between a first point and a second point of an electrical circuit comprising:

a hollow housing;

a stationary electrical contact positioned within the housing and connectable to the first point of the electrical circuit;

a movable contact means including:

operating means for reciprocating said movable contact means, said operating means being connectable to the second point of the electrical circuit,

a contact head dimensioned to electrically engage with said stationary contact, said contact head having a gas vent opening formed therein,

resilient means connecting one side of said contact head to said operating means,

trailer means mounted at one end on the other side of said contact head and formed of a material that produces an arc quenching gas when exposed to an electrical arc, and

engaging means formed on the other end of said trailer means; and

detent means mounted within said housing for engaging said engaging means and retaining said contact head in engagement with said stationary contact as said operating means moves in a direction to open said contacts until said resilient means is loaded to provide sufficient force to overcome engagement of said detent means with said engaging means so that said contact head rapidly disengages said stationary contact;

said gas vent opening providing reduced area pressure relief so that when said operating means is moved in a direction to close said contact head and said stationary contact and

a pre-strike arc is formed therebetween, said arc quenching gas, confined between said contact head and said trailer means, applies a net force to said trailer means, thereby forcing said contact head into rapid engagement with said stationary contact.

4,271,340

ELECTRICAL VACUUM SWITCH HAVING MEANS FOR GENERATING AN AXIAL MAGNETIC FIELD BETWEEN THE CONTACT FACES

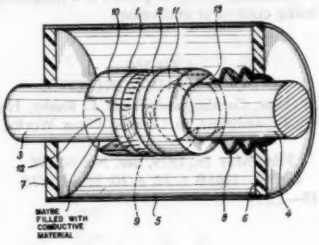
Bertus Griesen, Hengelo (O), Netherlands, assignor to Hazemeijer B.V., Hengelo (O), Netherlands

Filed Dec. 1, 1978, Ser. No. 965,409

Claims priority, application Netherlands, Dec. 5, 1977, 7713436

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **7 Claims**



1. An electrical vacuum switch within a vacuum switch enclosure, comprising:

two contact members movable in and out of engagement with one another; and

at least one magnetically permeable yoke partially surrounding each of said two contact members in a region proximate to the tangent plane of contact between said two contact members, each of said yokes including a part having a low magnetic permeability, said part having a low magnetic permeability of each of said yokes being positioned with respect to an axis through said two contact members at a location opposite to the location of said part having a low magnetic permeability of the other yoke, such that upon the passage of current through the vacuum switch each of said yokes is magnetized and the flux lines emanating from each yoke at the tangent plane of contact between the two contact members traverses substantially to the other yoke.

4,271,341

CIRCUIT BREAKER OPERATING MECHANISM

Thomas N. Meyer, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 762,542, Jan. 26, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,369

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **3 Claims**

1. A compressed-gas puffer type circuit interrupter comprising in combination:

(a) means defining a gas-compressing piston part;

(b) means defining a gas-compressing cylinder part;

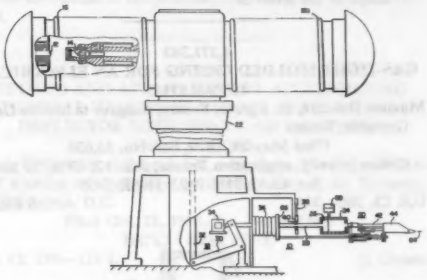
(c) means defining a relatively stationary contact;

(d) means defining a cooperable relatively-movable contact cooperable with said relatively stationary contact to establish an arc therebetween during the opening operation of the puffer type circuit interrupter;

(e) means defining a hollow movable orifice member to assist in directing compressed gas against said established arc;

(f) means attaching said hollow movable orifice member and also said relatively movable contact with one of said gas-compressing parts;

(g) operating means utilizing explosive detonating means for operating said compressed gas puffer type circuit interrupter and thereby effecting relative motion between said two gas-compressing parts for thereby compressing gas therebetween and thus forcing said compressed gas through said hollow movable orifice and into engagement



with the established arc to quickly effect the latter's extinction;

(h) the detonating means comprising a propellant charge of solid expulsive material, a burnable igniter for the charge, a primer for the igniter, and ignition means for producing an electric charge in the primer; and

(i) the ignition means comprising an ignition line for detecting an overcurrent or fault in the circuit of the separable contacts.

4,271,342

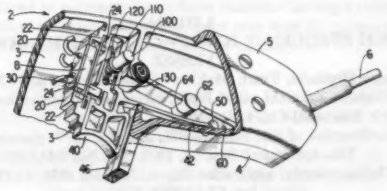
LOCK-ON TRIGGER SWITCH WITH INTEGRAL RETURN SPRING

James R. Sistare, Pickens, S.C., assignor to The Singer Company, Stamford, Conn.

Filed May 15, 1980, Ser. No. 150,256

Int. Cl.³ H01H *3/02, 9/06*

U.S. Cl. 200—157 **4 Claims**



1. In a portable appliance having an outer housing such as a portable motor driven tool, or the like, an operator actuatable control means for controlling an electric switch comprising:

a. a finger actuatable slide member of integral one piece construction having an outwardly extending resilient spring portion, said slide member adapted for manually actuated motion with respect to said appliance;

b. a guide means attached to said appliance for constraining said motion of said slide member to a linear motion in a predetermined direction;

c. wherein said spring portion is cantilevered from said slide member and formed approximately perpendicular to said direction of said linear motion, said spring portion being of rectangular cross section and having an extremity terminating in a generally cylindrical shaped portion; and

d. an abutting means for engaging said spring portion so that a biasing force is effected in opposition to said manually actuated motion comprising a flat surface formed in said

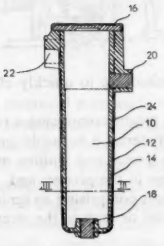
outer housing approximately perpendicular to said direction of said linear motion and a boss in said housing having a curved surface and arranged in pressing contact with said spring portion at a point a finite distance away from said extremity so that said cylindrical shaped portion is in pressing contact with said flat surface whereby when said slide member is actuated by the operator's finger said cylindrical shaped portion will slide to-and-fro on said flat surface and said spring portion will assume the general shape of the letter S.

4,271,343

GAS-TIGHT MOLDED CASING FOR AN ELECTRICAL APPARATUS

Maxime Danchin, St. Egreve, France, assignor to Merlin Gerin, Grenoble, France

Filed May 29, 1979, Ser. No. 43,036
Claims priority, application France, Jun. 12, 1978, 78 18032
Int. Cl.[3] H01H *9/02;* H05K *5/00*
U.S. Cl. 200—304 **5 Claims**



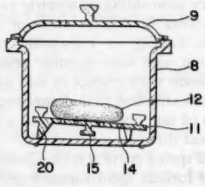
1. A gas-tight molded casing having a wall of an insulating molded synthetic resin for housing an electrical compressed gas apparatus comprising a sack shaped net, embedded in said wall, said net being of a resilient insulating material so designed as to retain the casing fragments in case of an accidental explosion of the casing under said compressed gas pressure and to allow the compressed gas to escape.

4,271,344

HIGH FREQUENCY HEATING OVEN WITH COOKING VESSEL

Masao Horiuchi, Tenri; Makiko Miyake, Ikoma, and Chizuko Yoshida, Takaichi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 806,071, Jun. 13, 1977, abandoned.
This application Sep. 12, 1978, Ser. No. 941,636
Claims priority, application Japan, Jun. 16, 1976, 51/79546
Int. Cl.[3] H05B *6/80*
U.S. Cl. 219—10.55 E **1 Claim**



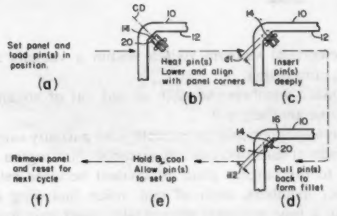
1. A cooking vessel for use in a high frequency heating oven comprising: a cylindrical body having a bottom; and a combination weighting plate and foodstuff support positioned in said cylindrical body with a space between the inside surface of the cylindrical body and the outside periphery of the combination weighting plate and foodstuff support, said cylindrical body and bottom and said combination weighting plate and foodstuff support both being made of an electromagnetic wave permeable material and having a specific gravity greater than 1, said combination weighting plate and foodstuff support having a plurality of vapor escapement holes therein and a plurality of projections on one surface thereof, one of said projections having a height greater than that of the remaining projections and further having at least one auxiliary knob on the surface opposite the surface with said projections thereon, said auxiliary knob being positioned adjacent the periphery of said combination weighting plate and foodstuff support, whereby said combination weighting plate and foodstuff support can be turned with the projections extending down and be used as an inclined support for foodstuff and can be lifted by said auxiliary knob with the foodstuff thereon, and said combination weighting plate and foodstuff support can be turned with the projections extending up and be placed as a weighting plate on foodstuff being cooked in said vessel.

4,271,345

INDUCTION HEATING COIL

Wilbur C. Palmer, Corning, and Frank L. Rusby, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 18, 1979, Ser. No. 40,295
Int. Cl.[3] H05B *6/36, 6/10;* H01J *9/18*
U.S. Cl. 219—10.79 **7 Claims**



1. An induction coil for heating a support pin in a confined location comprising: a primary coil assembly having a selected number of respective inner and outer turns,

a cylindrical tube having an axial extent substantially the same as an axial extent of the primary coil disposed concentrically between said inner and outer turns, said outer turns being spaced apart near an axially central location of said primary coil, at least two integral annular surface portions extending radially outwardly of said cylindrical tube and being spaced substantially equidistant to either side of the axial central location, for forming boundaries of the space in said primary coil,

a secondary coil located in the space near the axial central location and supported by said cylindrical tube, said secondary coil including input leads and outrigger leads at each free end thereof, and an output loop located at a free end of said outrigger leads, said output loop being spaced from and off axis of said primary coil and forming at least a one turn secondary coil, said primary coil having an offset outer turn electrically isolated from the secondary coil and to bridge the space provided in said primary coil, and the spacing of said annular surface portions is at least equal to the width of one turn of said secondary coil and said annular surface portions extend radially outwardly at least a distance sufficient to electrically insulate the primary and secondary coils, and

an insulating shim located between said outrigger leads for insuring electrical isolation of one lead to the other, the primary and secondary coils being electrically coupled by induction, said primary coil being adapted to be energized

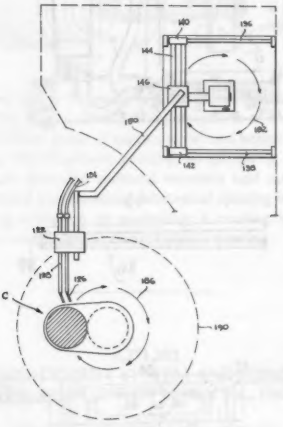
by AC power and said secondary being responsive to induced current produced thereby to produce a resulting strong electrical output in the vicinity of said output loop, said output loop being sized so as to be capable of close proximate relation within relatively closely spaced locations.

4,271,346

WELDING APPARATUS CAPABLE OF WELDING AXIALLY OFFSET PORTIONS

Jay C. Hardy, Somis, Calif., assignor to Hardy Welded Products, Inc., Camarillo, Calif.

Filed Nov. 2, 1978, Ser. No. 957,318
Int. Cl.³ B23K *9/04, 9/12, 37/04*
U.S. Cl. 219—76.14 **54 Claims**



19. Apparatus capable of applying weld material to a metal part, said apparatus comprising:

(a) frame means,

(b) first and second spaced apart releasable clamping means on said frame means for engaging the ends of a part and supporting the part in rotatable manner with respect to said frame means,

(c) a drive motor,

(d) a drive shaft powered for rotation by said motor and being connected to said first clamping means for causing rotation of said first clamping means and a metal part retained thereby, said drive shaft having a central bore extending therethrough,

(e) bolt means extendable through a portion of the central bore of said drive shaft and said first clamping means and capable of being releasably coupled to said drive shaft to releasably retain same in said first clamping means, said metal part being primarily supported by said clamping means and said bolt means being located to perform a primary function of aligning said metal part, and

(f) a welding torch operatively associated with said frame means and having a weld material feeding end locatable in proximity to said part for applying a weld material thereto.

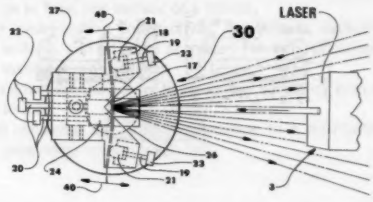
35. In a welding apparatus for applying weld material to a crankshaft having journals and crankpins forming a part thereof and which apparatus comprises a means for rotatably supporting said crankshaft with respect to said frame means and a drive means capable of being coupled to a crankshaft for causing rotation of said crankshaft, and a carriage shiftable in a path generally parallel to a longitudinal axis of said crankshaft and carrying a welding torch having a weld material application end in proximity to said crankshaft, an improvement comprising an X-Y position torch coordinating mechanism mounted on and movable with said carriage having a member capable of being individually movable in each of a pair of generally mutually perpendicular paths and capable of being movable simultaneously in each of said pair of mutually perpendicular paths thereby defining a substantially accurate circular path, said torch being operatively connected to said member for movement in a substantially accurate circular orbit conforming substantially to said circular path so that the application end of said torch can follow in close proximity the rotable movement of the journals and crankpins of said crankshaft.

4,271,347

METHOD AND APPARATUS FOR ACCELERATING CHEMICAL REACTIONS USING A SPREAD BEAM DEFLECTOR WITH SINGLE OR MULTIPLE REFLECTORS

Hardy C. Svenson, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Treasury, Washington, D.C.

Filed Oct. 18, 1978, Ser. No. 952,886
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 L **11 Claims**



1. Laser apparatus comprising a laser source which produces a beam of coherent radiation having a substantially circular outline, and a stationary optical system arranged to disperse and thereby spread said beam in a controlled manner into an elongated elliptical band of radiation having substantially uniform energy density across the expanded dimension of said beam, said optical system including at least one deflecting means arranged to intercept and deflect said beam across one tranverse dimension so that said beam is converted into a spread band of substantially uniform radiation having an elongated elliptical cross-section of greater area than the cross-section of the impinging circular beam of radiation.

4,271,348

ELECTRON BEAM WELDING METHOD AND APPARATUS THEREFOR

Takamitsu Nakazaki; Hisanao Kita, and Yoji Akutsu, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1979, Ser. No. 48,883
Claims priority, application Japan, Jun. 16, 1978, 53-72131
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 ED **6 Claims**

1. An apparatus for electron beam welding, comprising:

electron gun means for emitting electron beams from its tip;

magnetic shielding means mounted on the tip of the electron gun and surrounding emitted electron beams with a spacing therebetween, for shielding stray magnetic fields from the electron beams that will pass from the tip of the shielding means opposite from said gun means to a welding area;

means provided around the tip of the magnetic shielding means for removing metal deposit accumulated on the magnetic shielding means during welding while said electron gun means is emitting electron beams without interrupting welding and without interrupting the electron beams; and

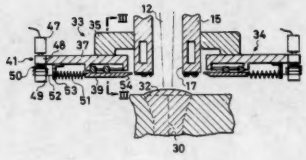
the means for removing metal deposit comprising a pair of knife edges with a passage between them in a closed posi-

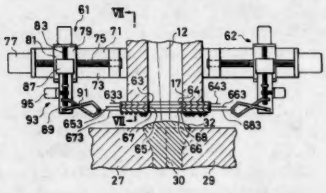
tion for emitted electron beams, and driving means for driving the pair of knife edges along a surface of the tip of the magnetic shielding means towards each other to the closed position, and away from each other and away from the electron beam to an open position, to cut off metal deposit accumulated on the surface of the tip of the magnetic shielding means while moving towards each other to the closed position.

6. A method of welding two metals by an electron beam welding apparatus, comprising the steps of:

providing an electron beam gun and a magnetic field shield aligned with the electron beam gun to provide a passage of the electron beam from the gun through the shield toward a welding area;

supporting two metals to be welded in the welding area so that an abutment of the two metals will align with the passage of the electron beam from the electron gun through the shield to the welding area, and spacing the two metals from the adjacent end of the shield a predetermined distance;





simultaneously emitting electron beams from the electron gun through the magnetic field shield to the abutment of the two metals within the welding area to thereby weld the two metals together, which will result in metal depositing on the adjacent end of the magnetic field shield;

removing the metal deposit accumulated on the adjacent end of the magnetic field shield during the welding of the two metals without interrupting the step of emitting and without interrupting the welding of the two metals; and

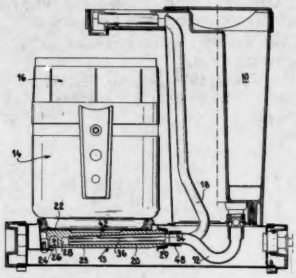
said step of removing including providing a plurality of plates stacked in the direction of the passage of the electron beam at the adjacent end of the magnetic field shield so as to accumulate the metal deposit on the plates exposed to and facing the two metals being welded, and removing the plates on which the metal deposit has accumulated from the weld area so as to expose the next plates in the stack of plates to the welding area to thereafter accumulate the metal deposit on said next plates while continuing the step of emitting and welding throughout the step of removing.

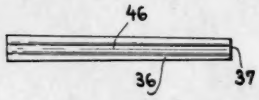
4,271,349

WATER HEATER

François H. J. Hamon, Alencon, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France

Filed Jun. 4, 1979, Ser. No. 45,328
Claims priority, application France, Jun. 9, 1978, 78 17259
Int. Cl.[3] F24H *1/16*
U.S. Cl. 219—283 3 Claims





1. A water heater comprising a horizontally supported hot plate made in a single piece by casting metal and having upper and lower spaced faces extending substantially parallel to one another and a peripheral face, an electrical resistance arranged to heat said plate, a flattened cavity formed within said plate and having the shape of a pocket extending in a direction substantially parallel to the upper and lower faces from an oblong open end located on said peripheral face to a closed end located within the plate, said cavity having integral substantially planar upper and lower internal walls and a peripheral wall of generally parabolic shape with the horizontal width of the open end greater than the horizontal width of the section of the cavity near its closed end, and a partition inserted in the cavity between the upper and lower walls thereof transversely of the open end and extending from said open end towards said closed end, said partition defining together with the walls of the cavity a substantially U-shaped free space which extends around the internal free end of said partition and which constitutes within the cavity a circulation passage for water to be heated.

4,271,350

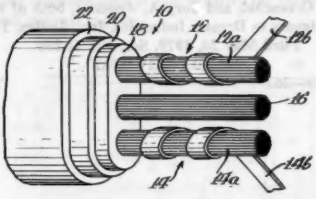
BLANKET WIRE UTILIZING POSITIVE TEMPERATURE COEFFICIENT RESISTANCE HEATER

George C. Crowley, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed May 19, 1980, Ser. No. 150,873
Int. Cl.[3] H05B *3/54*
U.S. Cl. 219—549 6 Claims

1. A self-limiting electric heating element adapted for use in flexible heated products such as electric heating pads, electric

blankets and the like comprising a pair of spaced elongated conductors each of which include a flexible insulating core supporting a conducting wire helically wound thereon, an envelope of positive temperature coefficient material extruded over said spaced conductors to surround said conductors and providing a conducting path between said resistance wires through said material, a thermoplastic coating enclosing said positive temperature coefficient material, said coating having a



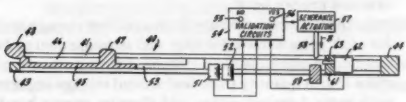
melting point above the melting point of said material to maintain the shape during an annealing operation at a temperature above the melting point of said material and below the melting point of said thermoplastic coating, an insulating spacer positioned in said extruded material between said conductors to prevent contact and maintain substantial spacing between said wires during extrusion or annealing, a coating of insulating material surrounding said thermoplastic coating.

4,271,351

CASH REPLACEMENT SYSTEM AND COMPONENTS

William T. Bloodworth, 24W631 Hobson Rd., Oak Brook, Ill. 60540

Filed Aug. 17, 1979, Ser. No. 67,569
Int. Cl.³ G06K *7/08, 19/06*
U.S. Cl. 235—375 **13 Claims**



13. A card reader for a cash replacement system utilizing consumable transaction cards, each card including a body portion bearing machine readable identification and validity codes and a pluraity o sequentially severable transaction segments each bearing the identification code, the card reader comprising:

a first sensor for sensing the codes on the body portion of one of the cards;

a validation data store having a validation code recorded therein;

validity comparison means for comparing the validation code from the validation data store with a validation code output from the first sensor to determine the presence of a validity match;

a second sensor for sensing the presence of a transaction segment on the card;

transaction approval means, connected to the validity comparison means and the second sensor, responsive to the combination of a validity match and the presence of a transaction segment, for approving a transaction;

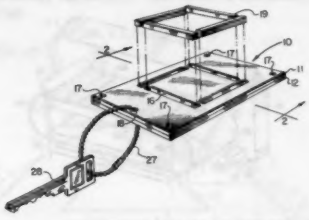
and segment severing means, actuated by the transaction approval means, for severing a transaction segment from the card.

4,271,352

LOST PERSONAL ACCESSORY RETURN METHOD AND ARTICLE

Lon G. Thomas, 1314 N. Floyd Rd., Richardson, Tex. 75080

Filed May 7, 1979, Ser. No. 36,307
Int. Cl.³ G06F *15/20;* **G06K** *19/02*
U.S. Cl. 235—375 **13 Claims**



1. A method for confidential return of a lost personal accessory item to its owner, comprising the steps of:

(a) printing generally applicable finder's return instructions on at least one surface of a holder,

(b) incorporating coded credit, expenditure, authorization, address, and personal accessory item classification information into the holder,

(c) attaching the holder to a personal accessory item subject to loss,

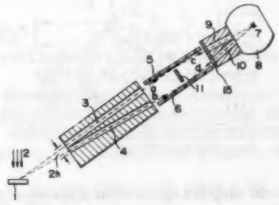
(d) accessing the coded information to a distributed data processing system when lost.

4,271,353

X-RAY SPECTROSCOPE

Nobuo Ohtsuki, Ibaraki; Eiji Yamada, Kyoto, and Tadashi Utaka, Takatsuki, all of Japan, assignors to Rigaku Industrial Corporation, Takatsuki, Japan

Filed Jun. 27, 1979, Ser. No. 52,943
Claims priority, application Japan, Feb. 19, 1979, 54-17272
Int. Cl.³ G01N *23/20*
U.S. Cl. 250—276 **9 Claims**



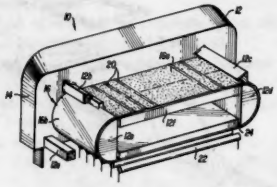
1. An X-ray spectroscope comprising a means for causing emission of characteristic X-rays from a sample to be analyzed, a pair of soller slits disposed such that one end of each faces said sample, a pair of total reflection mirrors disposed such that one end of each faces the other end of said respective soller slits and that the reflecting surfaces thereof face each other and an X-ray detector disposed at a position at which X-rays reflected by said total reflection mirrors intersect each other, with said total reflection mirrors making a predetermined angle with respect to X-rays passed through said respective soller slits.

4,271,354

MANUAL BELT ELECTRO-OPTICAL CONTROL

Richard H. Shellenberger, Asheville, N.C., assignor to SHS Research Labs, Inc., Asheville, N.C.

Filed Aug. 9, 1979, Ser. No. 65,349
Int. Cl.[3] G02F 1/01; H01J 40/14
U.S. Cl. 250—211 K 7 Claims



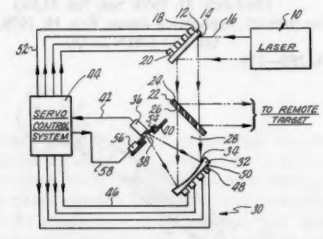
1. An electro-optical control comprising:
a housing;
a source of light;
a photocell;
an endless belt having a substantially planar run reversibly, intermittently, and manually alone movable with a finger applied to the exterior of the belt, said belt having portions of different light penetrability from each other over its extent;
guide means on the housing holding the belt in an extended position and guiding it in an endless path when the one run of the belt is manually moved;
either said light source or said photocell being within the belt and the other of said light source and said photocell being exterior of and adjacent to the belt.

4,271,355

METHOD FOR MITIGATING 2πN AMBIGUITY IN AN ADAPTIVE OPTICS CONTROL SYSTEM

George R. Wisner, Deep River, and Robert M. Elkow, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 30, 1979, Ser. No. 71,510
Int. Cl.[3] G01J 1/20
U.S. Cl. 250—201 4 Claims



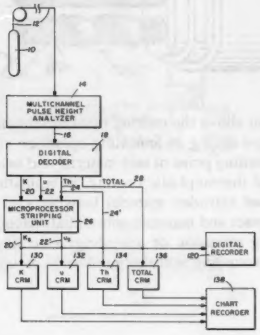
1. An improved adaptive optics control system of the type in which phase distortions in a beam of radiation are corrected by impressing dither signals on at least a portion of the beam with dither actuators attached to a dither mirror and the dither beam is focused with focusing optics through an aperture to a detector to provide electrical input signals which are synchronously processed in a servo system with electrical signals provided to the dither actuators to provide electrical correction signals to corrector actuators on a phase correction mirror to provide phase corrections to the beam of radiation wherein the improvement comprises:
a field stop having an aperture with a variable diameter disposed between the detector and the focusing optics substantially at the Fourier transform plane of the focusing optics; and
means for varying the diameter of the aperture slowly compared to the bandwidth of the control system.

4,271,356

METHOD AND APPARATUS FOR NATURAL GAMMA RAY SPECTRUM ANALYSIS USING MICROPROCESSOR STRIPPER

Vernon E. Groeschel, and Jorg A. Angehrn, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 24, 1979, Ser. No. 41,859
Int. Cl.[3] G01V 5/00
U.S. Cl. 250—262 7 Claims



7. A method for determining the amounts of natural gamma radiation from potassium, uranium and thorium in earth formations, comprising the steps of:
detecting natural gamma radiation pulses within energy bands corresponding to potassium, uranium and thorium;
adding a first quantity to a first storage register for each pulse detected within said potassium energy band and to a second storage register for each pulse detected within said uranium energy band;
subtracting a second quantity from said first storage register for each pulse detected within said uranium energy band;
subtracting a third quantity from said first storage register and a fourth quantity from said second storage register for each pulse detected within said thorium energy band;
comparing the quantity in said first storage register to a fifth quantity and the quantity in said second storage register with a sixth quantity;
generating a pulse indicative of gamma radiation corresponding to potassium when said first storage register quantity exceeds said fifth quantity;
generating a pulse indicative of gamma radiation corresponding to uranium when said second storage register quantity exceeds said sixth quantity; and
recording indications of gamma radiation corresponding to potassium, uranium and thorium.

4,271,357

TRACE VAPOR DETECTION

Robert F. D. Bradshaw, Markyate, and Alec Kraicer, Edgeware, both of England, assignors to Pye (Electronic Products) Limited, Cambridge, England

Filed Mar. 8, 1979, Ser. No. 18,801
Claims priority, application United Kingdom, May 26, 1978, 23040/78; May 31, 1978, 24764/78
Int. Cl.[3] B01D 59/44; H01J 49/00
U.S. Cl. 250—287 23 Claims

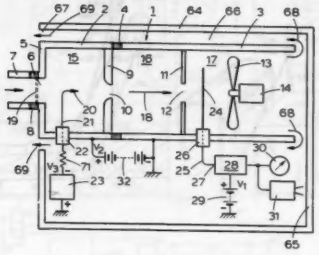
1. An apparatus for detecting trace quantities of chemical species in an oxygen-containing gaseous mixture comprising:

a hollow body having serially an input region, a first internal region, a second internal region, a third internal region, and an outlet region;

means for flowing an oxygen-containing gaseous mixture including trace quantities of chemical species through said hollow body;

means in said first internal region for ionizing at least a portion of molecules of said gaseous mixtures including said chemical species;

means for selecting ions of one polarity for travel into said second internal region;



means between said first internal region and said second internal region for inducing flow of a substantially uniform velocity jet of at least a sample portion of said ionized gaseous mixture and said ionized chemical species through said second internal region into said third internal region;

means for directing an ion repulsive electric field with respect to non-selected species in an opposite direction to said flow of said sample portion in said second internal region; and

means in said third internal region for collecting ions of said one polarity which have ionic mobilites of a value permitting travel into said third internal region.

4,271,358

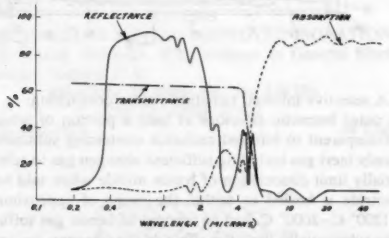
SELECTIVE INFRARED DETECTOR

Frank Schwarz, 156 Thunderhill Dr., Stamford, Conn. 06902

Filed Nov. 13, 1979, Ser. No. 93,859

Int. Cl.³ G01J *1/00*; G02B *5/22*

U.S. Cl. 250—338 **6 Claims**



1. An infrared detector substantially insensitive to short wave radiation, such as radiation in the visible, and responsive to infrared radiation at least in the range longer than 7μ, which comprises, in combination, a thermal detector coated with a thin film of a white material having a very high diffusely reflective power in the visible and absorbing in the longer infrared, whereby the detector is capable of giving responses in the longer infrared and at the same time reflects strongly in the short wave radiation, preventing false responses from short wave radiation, such as visible light.

4,271,359

OPTICAL ARRANGEMENT FOR A PASSIVE INFRARED MOTION DETECTOR

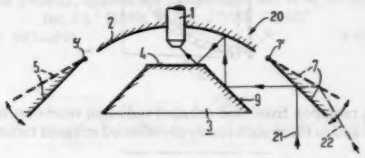
Thomas Herwig, Schlangenbad, and Gerhard Doenges, Taunusstein, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,846

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916768

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—347 **6 Claims**



1. An optical arrangement for a passive infrared motion detector for monitoring a space, said infrared motion detector including detector means for forming a signal from a characteristic change of the detected infrared radiation, said arrangement including mirror means for directing radiation from at least one field of vision onto the detector means, each field of vision forming an optically effective curtain to define at least a boundary of a space to be monitored, said mirror means including at least one planar directional mirror, a body with the shape of a conical frustum, and one concave mirror, said concave mirror being disposed to centrically surround the detector means in the same direction of view, said body being arranged opposite the detector means on the optical axis thereof with a planar mirror surface facing the detector means and extending in a plane perpendicular to the axis of said detector means, said body having a conical reflecting surface extending from said planar mirror surface and facing said concave mirror, each of the planar directional mirrors facing the conical reflecting surface of said body, and being capable of being rotated about an edge facing away from the direction of view with respect to the optical axis of the concave mirror to change the position of the field of view.

4,271,360

INFRA-RED SURVEILLANCE SYSTEMS USING MULTI-FACETED MIRROR

Brooke A. Ward, Reading, England, assignor to Intrusion Microwave Electronics Limited, East Molessey, England

Filed Dec. 22, 1978, Ser. No. 972,530

Claims priority, application United Kingdom, Dec. 22, 1977, 53426/77

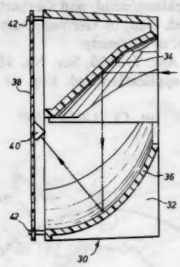
Int. Cl.³ G01J *1/00*; G02B *5/08*

U.S. Cl. 250—353 **5 Claims**

1. An infrared surveillance system which comprises:

a main body integrally formed of a plastic material and having side walls, said main body including an infrared radiation receiving member and a focusing member disposed in spaced relationship between said side walls, said infrared radiation receiving member being formed of a plurality of mirrored facets, each of said mirrored facets being angularly disposed to thereby define an area of surveillance divided into monitored zones and unmonitored zones, said facets being of varying area whereby facets of larger areas provide an increased aperture to be

responsive to movement of more distant objects, said focusing member being disposed to receive reflected infra-



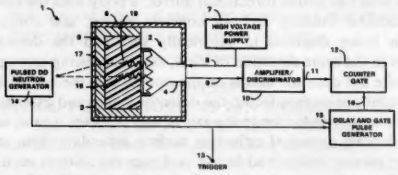
red radiation from said infrared radiation receiving member and to focus such received reflected infrared radiation.

4,271,361

ARSENIC ACTIVATION NEUTRON DETECTOR

Eddy L. Jacobs, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 115,867
Int. Cl.³ G01T *3/00*
U.S. Cl. 250—390 **8 Claims**



1. A neutron detector comprising: a layer of arsenic for receiving fast neutrons and emitting gamma radiation with a half-life of about 17 milliseconds when activated by the fast neutrons; and means positioned adjacent said arsenic layer for detecting and indicating the gamma radiation.

4,271,362

METHOD AND APPARATUS FOR DETECTING A DISTANT OBJECT USING GAMMA RADIATION

Leonard R. Stone, South Euclid; Steven J. Aron, Jr., Parma, and Robert A. Kemmerling, Cleveland Heights, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 537,458, Dec. 30, 1974, Pat. No. 4,033,885.
This application Oct. 15, 1976, Ser. No. 732,594
The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.
Int. Cl.³ G21F *5/02*
U.S. Cl. 250—496 **19 Claims**

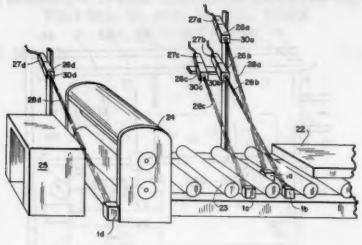
1. A system for determining the presence of an object in an atmosphere subject to conditions which block the transmission of light and infra red radiation comprising:

(a) a radioactive energy source having a radiating face for providing a radiation signal;

(b) source collimator means adjacent said energy source for collimating said radiation signal to provide a highly collimated beam of radiation having relatively constant intensity and substantially parallel rays over a predetermined distance r on the order of tens of feet, said source collimator means having a plurality of elongated parallel members of generally equal length and cross-sectional areas which are secured together into a rigid assembly to define a multitude of elongated parallel passages among said assembled members, a plurality of ends of said assembled members being transversely supported from and substantially shielding said source radiation face; and,

(c) a detector disposed in continuous alignment with the collimator means and at or within the predetermined distance r and in the path of said beam, said predetermined distance substantially characterized by

$$r=(L\ D)/d$$



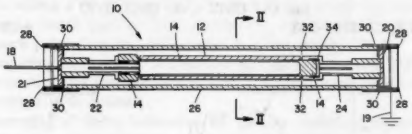
wherein L is the length of said assembled members, D is the diametrical extent of said detector, and d is the diametrical extent of one of said elongated passages wherein L is much larger than d and D is larger than the overall diametrical extent of the beam as it emerges from the parallel passages such that the rays of said beam are substantially within the area confines of the detector at distances within said predetermined distance r.

4,271,363

APPARATUS AND METHOD FOR SELECTIVELY GENERATING INFRARED RADIATION

Norman C. Anderson, San Jose, Calif., assignor to ILC Technology, Inc., Sunnyvale, Calif.

Filed Mar. 12, 1979, Ser. No. 19,467
Int. Cl.³ G01J *1/00*; H01K *1/26*
U.S. Cl. 250—504 R **7 Claims**



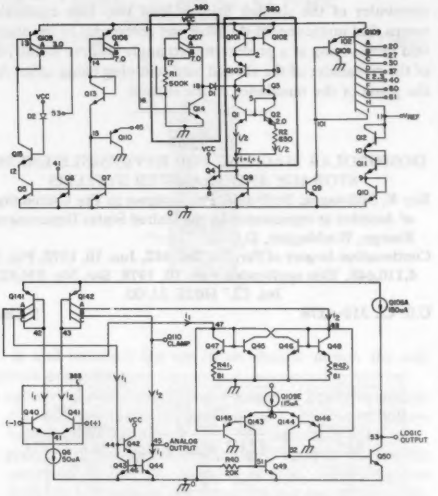
1. A selective infrared radiation source comprising:

an outer hermetic envelope at least a portion of which is transparent to infrared radiation containing substantially only inert gas including sufficient nitrogen gas to substantially limit dissociation of boron nitride when said boron nitride is heated to within the range of approximately 1200° C.–2000° C. and an amount of xenon gas sufficient to substantially limit the effect of the nitrogen gas on the thermal conductivity of said inert gas, an elongated resistive element capable of being heated by the passage of electrical current therethrough supported within said envelope, an opaque body of boron nitride supported within said envelope positioned to surround said resistive element and defined in a chemically non-reactive relationship with said resistive element when said element is at a temperature of up to 2000° C., and means for applying an electric current through said envelope to said resistive element.

4,271,364
BISTABLE HYSTERETIC INTEGRATED CIRCUIT

Mark Leonard, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 27, 1978, Ser. No. 963,724
Int. Cl.[3] H03K 5/24
U.S. Cl. 307—355 10 Claims

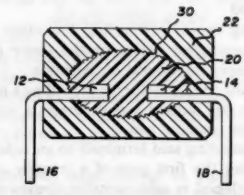


1. A bistable hysteretic integrated circuit comprising:
current reference means including a first resistor for providing a reference current;
signal means coupled to the current reference means for producing, in response to first and second input signals applied thereto, first and second signal currents having a sum responsive to the reference current; and
hysteretic switch means including a second resistor and being coupled to the signal means for providing a logical switched state representative of the first and second signal currents, the first and second signal currents differing one from another by a preselected factor determined by a ratio of the first and second resistors.

4,271,365
OPTOCOUPLER HAVING IMPROVED ISOLATION

Norbert Adams, Syracuse, N.Y., assignor to General Electric Company, Auburn, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,596
Int. Cl.[3] G02B 27/00
U.S. Cl. 250—551 16 Claims

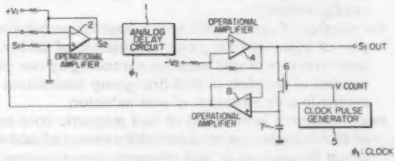


1. In an electrical device having separately formed inner and outer insulative portions having a boundary therebetween, said boundary intersecting an input and an output terminal, the improvement for increasing the breakdown voltage of the device comprising:
a layer of breakdown voltage enhancing material between said inner an outer insulative portions for increasing the dielectric strength of said device along said boundary.

4,271,366
ANALOG SIGNAL DELAY CIRCUIT

Takuro Isayama, Tokyo; Takeshi Takemoto; Tsutomu Sato, both of Yokohama, and Takao Fukazawa, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 18, 1979, Ser. No. 4,484
Claims priority, application Japan, Jan. 18, 1978, 53-3839
Int. Cl.[3] H03K 5/159, 17/16, 17/687
U.S. Cl. 307—591 3 Claims

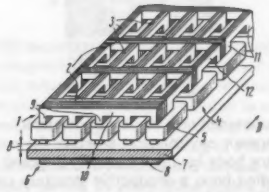


1. An analog signal delay circuit having means for compensating D.C. drift, comprising:
an input DC amplifier having input terminal means and an output terminal;
analog delay circuit means having (i) an input terminal coupled to said input DC amplifier output terminal, and (ii) an output terminal;
an output DC amplifier having input terminal means coupled to the output terminal of said analog delay circuit means and an output terminal;
first switching means for (i) disconnecting an analog input signal from the input terminal means of said input DC amplifier during recurrent blanking intervals, and for (ii) connecting a DC reference signal to said input terminal means of said input DC amplifier only during said blanking intervals;
means for storing a zero offset DC drift compensation signal;
second switching means for connecting the output terminal of said output DC amplifier to said storing means only during said blanking intervals; and
summing means coupled between said input terminal means and said storing means for combining said zero offset DC drift compensation signal with said analog input signal.

4,271,367
LINEAR INDUCTION MOTOR

Alexandr D. Popov, pereulok Rynochny, 44; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31; Sergei S. Khantimirov, pereulok Boevoi, 4, and Alexandr A. Shirokov, ulitsa Petrashevskogo, 48, kv. 23, all of Rostov-na-Donu, U.S.S.R.

Filed Feb. 11, 1980, Ser. No. 120,041
Int. Cl.[3] H02K 41/04
U.S. Cl. 310—13 2 Claims



1. A linear induction motor comprising:

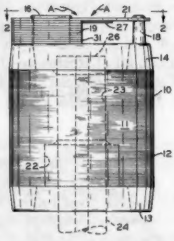
an inductor;
a magnetic core structure of said inductor;
a polyphase concentrated winding of said inductor;
coils of said polyphase concentrated winding of said inductor arranged in a plurality of rows;
first-group laminations of said magnetic core structure of said inductor extended in one direction;
rods of each of said first-group laminations of said magnetic core structure of said inductor;
each of said first-group laminations having at least four slots adapted to receive said coils of said polyphase concentrated winding of said inductor;
second-group laminations of said magnetic core structure of said inductor extended in another direction transversely of the first direction; rods of each of said second-group laminations of said magnetic core structure of said inductor;
each of said second-group laminations of said magnetic core structure of said inductor having an inverted U-shape configuration;
the number of said second-group laminations between each pair of adjacent first-group laminations of said magnetic core structure of said inductor exceeding by one piece the number of the slots in said first-group laminations of said magnetic core structure of said inductor;
said first-group laminations of said magnetic core structure of said inductor interconnected by means of said second-group laminations of said magnetic core structure of said indicator;
each said coil of said polyphase concentrated winding of said inductor encompassing one of said rods of at least one of said first-group laminations and one of said rods of at least one of said second-group laminations;
said coils of said polyphase concentrated winding of said inductor in each said row extended in the first direction having a forward phase rotation up to the middle of each said row and a reverse phase rotation thereafter;
said coils of said polyphase concentrated winding of said inductor in each said row extended in the second direction having a forward phase rotation;
a secondary element;
a magnetically conductive base of said secondary element;
an electrically conductive part of said secondary element arranged on said magnetically conductive base of said secondary element.

4,271,368

ROTOR ASSEMBLY HAVING SHROUD WITH REPLACEABLE KNOCK-OUTS

Richard D. Burns, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 25, 1978, Ser. No. 954,663
Int. Cl.³ H02K *15/00*
U.S. Cl. 310—42 **10 Claims**



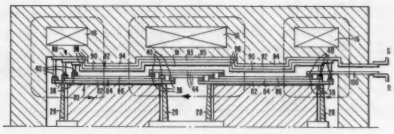
1. In a rotor assembly for use in a hermetically sealed regrigeration compressor environment wherein the rotor assembly includes a rotor body having a centrally disposed and longitudinally extending bore, a conductive structure carried by the body, a plurality of fastening means extending longitudinally from the conductive structure, and a shroud held in assembled relationship with the rotor body by the fastening means, the improvement wherein: said shroud includes means removably secured thereto for preventing gases from moving longitudinally therepast and toward the longitudinally extending bore; said means removably secured to said shroud including a plug attached to and forming a part of said shroud; said plug being attached to the remainder of said shroud by at least two tabs that each are a unitary structural part of both the plug and the remainder of the shroud, said at least two tabs establishing ramps that interconnect the plug and remainder of the shroud, said ramps lying at a predetermined angle relative to the plane of the remainder of the shroud, and said plug being offset from the plane of the remainder of the shroud.

4,271,369

HOMOPOLAR MACHINE FOR REVERSIBLE ENERGY STORAGE AND TRANSFER SYSTEMS

Roy E. Stillwagon, Ruffsdale, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 585,642, Jun. 10, 1975, Pat. No. 4,110,648. This application Feb. 10, 1978, Ser. No. 876,817
Int. Cl.² H02K *31/00*
U.S. Cl. 310—178 **5 Claims**



1. A homopolar generator-motor comprising:
a base supporting a stator and a rotor arranged to rotate therein;
said rotor comprising multiple modular hollow sleeves supported by internal arms extending radially outward from hubs centrally positioned in opposite ends of each sleeve;
sleeve support means extending upwardly from said base on which each of said hubs are respectively mounted to permit independent sleeve rotation;
means connecting a terminal to an end of one of said sleeves;
nonrotating conductors between the ends of adjacent sleeves;
current-collecting means supported on but insulated from said stator;
said current-collecting means separately connecting the ends of said rotatable sleeves with said nonrotating conductors to thereby provide a series connection in said rotor including the sleeves and nonrotating conductors when the current-collecting means engages their respective sleeves;
stationary conductor means extending the length of said stator and being mounted on but electrically insulated from the stator inner surface, a terminal on one end of the stationary conductor means located adjacent the sleeve terminal, and
interconnecting means connecting the other end of said stationary conductor means on the stator to the corresponding sleeve on the end of the rotor;
excitation means on said stator for providing a magnetic field which links said sleeves and generates a voltage therein during sleeve rotation; and
means for connecting said terminals to an inductive load;
whereby during the first part of a transfer cycle, kinetic energy developed in said rotatable sleeves is electrically transferred to said load, and during the second part of the cycle, electrical energy returned from the load establishes a second magnetic field which links the sleeves and coacts with the excitation means magnetic field to accelerate the

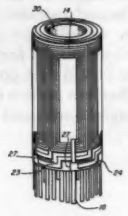
rotatable sleeves and thereby create kinetic energy therein for repetition of the transfer cycle.

4,271,370

DOUBLE AIR GAP PRINTED CIRCUIT ROTOR

Frank N. DiMeo, Drexel Hill, Pa., assignor to Litton Systems, Inc., Clifton Heights, Pa.

Filed Sep. 21, 1979, Ser. No. 77,853
Int. Cl.³ H02K *1/22*
U.S. Cl. 310—266 **4 Claims**



1. A coil structure for use in an electric motor, the coil structure comprising:

a cylindrical drum comprising a length of flexible non-conducting substrate material rolled into a plural layer hollow tube-like shape,

a plurality of side-by-side coils printed on both sides of the substrate material, the plurality of coils comprising nine coils on one side of the substrate and ten coils on the opposite side, the drum having a circumference equal to the width of four and three-quarters of a single printed coil,

first means for coupling said coils to an external source of excitation, said first means comprising lower tabs positioned beneath and outside of each of said side-by-side coils, the lower tabs being printed integrally with the side-by-side coils,

second means for coupling non-adjacent coils to one another in order to form a wave winding,

plated through holes extending from one side of the substrate to the other comprising a portion of the second means, and

jumper means connecting the first three coils on the substrate with the last three coils on the substrate comprising the remainder of the second means.

4,271,371

DRIVING SYSTEM FOR AN ULTRASONIC PIEZOELECTRIC TRANSDUCER

Shuhei Furuichi, and Takahiko Nose, both of Minami, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Sep. 26, 1979, Ser. No. 79,206
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—316 **13 Claims**

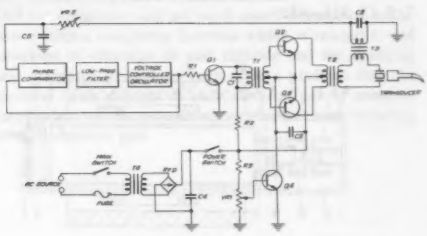
1. A driving circuit for ultrasonic tools which uses a piezoelectric transducer to convert ultrasonic electric signals into ultrasonic mechanical vibrations comprising:

a voltage-controlled oscillator which produces an output signal at a frequency that is proportional to an input voltage;

a power amplifier stage having its input coupled to the output of the voltage-controlled oscillator, said power amplifier stage comprising:

an output transformer which couples the output of the power amplifier stage to said piezoelectric transducer, said power output transformer further acting as both an insulating transformer and a boosting transformer for the power amplifier stage; and

a feedback transformer coupled in series with a secondary side of said output transformer and said piezoelectric transducer, said feedback transformer having a secondary side through which a current flows which is proportional to the current flowing through said piezoelectric transducer;



a phase comparator which blocks high frequency difference between two signals applied to two inputs of said phase comparator, said two inputs being respectively coupled to output signal of said voltage controlling oscillator and said secondary side of said feedback transformer; and

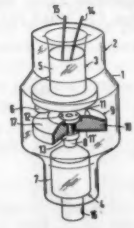
a low pass filter which blocks high frequency components of an input signal and allows only low frequency components to pass therethrough connected between an output of said phase comparator and said input of said voltage controlled oscillator.

4,271,372

ROTATABLE ANODE FOR AN X-RAY TUBE COMPOSED OF A COATED, POROUS BODY

Ernst Geldner, Rosstal; Rudolf Friedel, Kleinseebach, and Klaus Haberrecker, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 16, 1977, Ser. No. 777,916
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1976, 2618235
Int. Cl.³ H01J *35/08, 35/04;* B32B *3/26*
U.S. Cl. 313—330 **6 Claims**



1. A rotatable anode for an X-ray tube, said anode having an anode plate comprising a single body composed of a porous, difficult to melt material, said body being enclosed in a sealed fashion within an enveloping layer of difficult to melt material, a portion of said enveloping layer providing a target for impinging electrons, said porous body being of a material having a good thermal conductivity and a good thermal capacity, and said porous body having its pores filled with a filler material having a good thermal conductance and being a good conductor of heat.

4,271,373
CATHODE RAY TUBE WITH INCLINED ELECTROSTATIC FIELD LENS

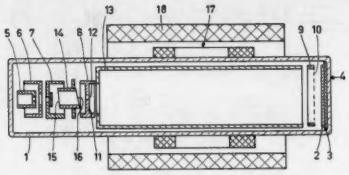
Erich E. Himmelbauer, and Joseph M. Koemans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,432

Claims priority, application Netherlands, Apr. 27, 1978, 7804518

Int. Cl.³ H01J *29/62, 31/38*

U.S. Cl. 313—432 **6 Claims**



1. A cathode ray tube, comprising a tubular envelope, a target on one end of the envelope, cathode means on the other end of the envelope for emitting an electron beam, a group of three tubular electrodes arranged in series between the cathode and the target, each of the electrodes having end faces, at least two of the end faces being so shaped that potential differences between the first and second electrodes and between the second and third electrodes form an inclined, electrostatic lens field between the first and second electrodes that deflects the electron beam away from the tube axis and forms an inclined, electrostatic lens field between the second and third electrodes that deflects the electron beam in the opposite direction toward the axis, a diaphragm in said third electrode, said diaphragm being provided with an aperture therethrough, the geometry of the electrodes being such that in the absence of said potential differences therebetween most of the electron beam from said cathode is intercepted by said diaphragm with a minor portion of the beam passing through the aperture, and in the presence of said potential differences most of the electron beam is concentrated in the aperture and passes therethrough at an angle to the tube axis.

4,271,374
ELECTRON GUN FOR CATHODE-RAY TUBE

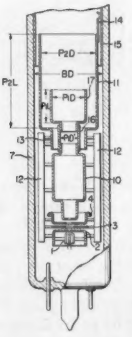
Masamichi Kimura, Ibaraki, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Sep. 12, 1979, Ser. No. 75,035

Claims priority, application Japan, Sep. 19, 1978, 53-115523

Int. Cl.³ H01J *29/56*

U.S. Cl. 313—449 **4 Claims**



1. An electron gun for a cathode-ray tube of the type wherein a cathode, a control grid electrode, an accelerating electrode, a first cylindrical electrode and a second cylindrical electrode are disposed in the order named in the neck portion of an envelope and are supported and electrically insulated from each other by electrically insulating supporting rods, whereby a main electron lens is formed between said first and second cylindrical electrodes, CHARACTERIZED in that one end of said second cylindrical electrode which is closer to said cathode is reduced in diameter and is supported by one end of said supporting rods; and said first cylindrical electrode has

a neck portion which is extended through said reduced end portion of said second cylindrical electrode coaxially thereof in radially spaced apart relationship therewith, and an enlarged diameter front portion which is extended from the front end of said neck portion coaxially thereof into the enlarged diameter portion of said second cylindrical electrode contiguous with said reduced diameter end portion thereof.

4,271,375
FLASH LIGHT DISCHARGE DEVICE

Tsutomu Hosono, Tokyo, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

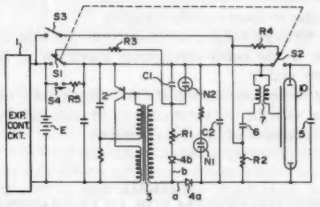
Continuation of Ser. No. 788,606, Apr. 18, 1977, Pat. No. 4,163,178. This application Jul. 2, 1979, Ser. No. 53,772

Claims priority, application Japan, Apr. 16, 1976, 51-43316; May 15, 1976, 51-61502

The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **1 Claim**



1. A flash discharge device comprising:

a blocking oscillator;

a first rectifier connected to said blocking oscillator to receive output signals therefrom and polarized to rectify output signals in one polarity;

a strobe circuit connected to said first rectifier and comprising a strobe tube and a main capacitor connected thereto to store electric charge supplied through said first rectifier to operate said strobe tube;

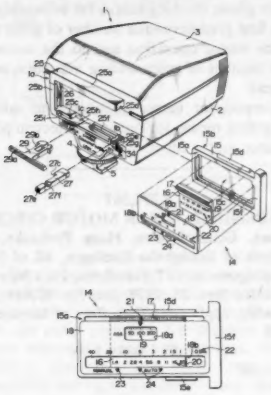
a second rectifier connected to the output of said blocking oscillator to receive output signals therefrom and polarized oppositely from said first rectifier to rectify in the opposite polarity said blocking oscillator output signals applied to said second rectifier; and

voltage indicating means for indicating that said main capacitor is being charged connected to said second rectifier to be energized by the oppositely polarized rectified signals therefrom.

4,271,376
ELECTRONIC FLASH

Mitsuo Kawazoe, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1979, Ser. No. 67,541
Claims priority, application Japan, Sep. 15, 1978, 53/112963
Int. Cl.[3] H05B *41/32*
U.S. Cl. 315—241 P 15 Claims

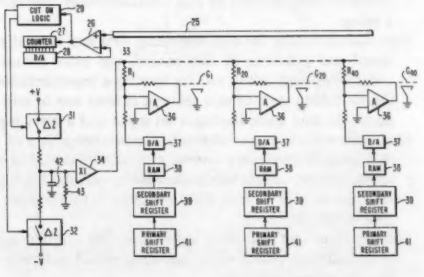


1. An improved flash having a selectively energizable source of illumination, means for controlling said source of illumination according to a plurality of operational modes including an automatic control mode and a manual control mode and a housing enclosing said source of illumination and said means for controlling, wherein the improvement comprises, frame means mounted upon an outer surface of said housing, and indicator panel means removably mounted within said frame means, said indicator panel means having front and rear surfaces and being selectively mounted within said frame means to externally expose selectively either said front or rear surface thereof, one of said front and rear surfaces of said indicator panel means having means for calculating a diaphragm value disposed thereon.

4,271,377
SYSTEM FOR COMPENSATING FOR CATHODE VARIATIONS IN DISPLAY DEVICES UTILIZING LINE CATHODES

Robert A. Gange, Belle Mead, and Frank J. Marlowe, Kingston, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,531
Int. Cl.[3] H01J *29/52*
U.S. Cl. 315—366 22 Claims



1. In a multielectron gun cathodoluminescent display device having a grid for modulating the electron beams of said electron guns and a line cathode for providing electrons for said electron guns, a system for compensating for vibration of said line cathode comprising:

means for sensing electron beam current at a selected one of said electron guns;

means for setting the cutoff voltage of said selected electron gun;

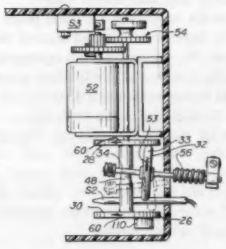
means for adjusting said cutoff voltage proportionally to said sensed electron beam current; and

means for weighting said adjusted cutoff voltage in accordance with a weighting function which is related to the envelope of vibration of said cathode and for applying said weighted voltage to each of said grids so that the electron beam current of each electron gun is compensated relative to the actual cathode displacement occuring at each electron gun.

4,271,378
TOY WITH REVERSIBLE DRIVEN HOIST

Robert J. Knauff, 819 N. Gardner St., W. Hollywood, Calif. 90046

Filed Dec. 28, 1978, Ser. No. 973,896
Int. Cl.[3] H02P *15/00*
U.S. Cl. 318—10 5 Claims



1. A reversible drive for a model or toy, which comprises:

a first rotatable shaft having a central reduced diameter;

a motor coupled to rotate said first rotatable shaft;

a pair of spaced apart drive discs fixedly mounted on said first rotatable shaft and having parallel opposed faces embracing said central reduced diameter thereof;

a second rotatable shaft disposed at a right angle to said first rotatable shaft and having a loosely mounted end remote from said first rotatable shaft;

a driven disc fixedly mounted on said second rotatable shaft in a plane at a right angle to said parallel spaced apart drive discs;

a lever for selectively biasing the circumferential edge of said driven disc against one of the opposed faces of said drive discs in one direction of rotation, and against the other opposing face of said drive discs to drive said driven disc in the opposite direction, said lever being pivotally connected to said second rotatable shaft remote from the loosely mounted end of said second shaft;

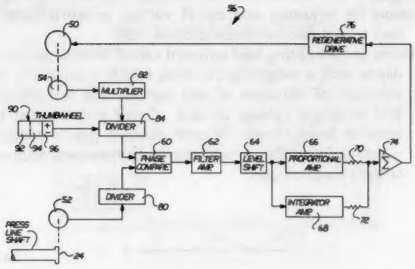
a fulcrum for said lever remote from said second rotatable shaft;

and means for pivotally biasing the loosely mounted second rotatable shaft having said driven disc mounted thereon into centered engagement with said central reduced diameter portion of said first rotatable shaft.

4,271,379
WEB FED PRINTING PRESS MOTOR CONTROL

Edward H. Eckelmeyer, Noank, Conn., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 29, 1978, Ser. No. 974,541
Int. Cl.³ H02P *5/46*
U.S. Cl. 318—77 **9 Claims**



1. In a web fed printing press having at least one printing unit including first web driving means driven by a first motor means for imparting motion to a web and downstream from said printing unit a second web driving means driven by a second motor means for receiving and imparting motion to said web prior to it being directed to utilization means, motor control means for controlling the web speed relationship at said two motor driven means comprising:

first means for supplying a first pulse train of pulses at a pulse dependent on said first motor speed;

second means for supplying a second pulse train of pulses at a pulse rate dependent on said second motor speed;

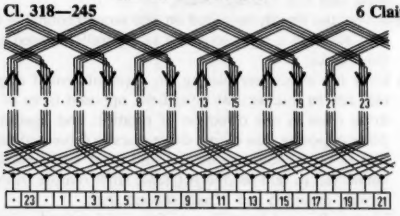
control means for receiving and comparing said first and second pulse trains and controlling energization of only said second motor means in a direction to lock said second pulse rate to said first pulse rate; and,

speed adjusting means for varying the pulse rate of said second pulse train supplied to said control means to thereby adjust the relative web speed at said first and second web driving means by effectively changing the number of pulses per revolution supplied by said second means to said control means.

4,271,380
ELECTRIC TWO-MOTOR DRIVE

Peter Bradler, Lengfeld, and Jaroslav Stepina, Kaiserslautern, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 946,862
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2774422
Int. Cl.³ H02K *23/64*
U.S. Cl. 318—245 **6 Claims**



1. A motor drive adapted to function selectably as a commutator motor having a first predetermined number of poles comprising,

(a) a stator core including

(i) first stator winding means for producing the first predetermined number of poles for commutator motor functioning and having a first pole pitch, and

(ii) second stator winding means for producing the second predetermined number of poles for induction motor functioning, and having a second pole pitch;

(b) a rotor core including

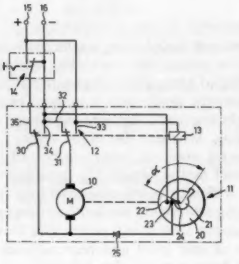
first rotor phase winding means for selectably responding to the first predetermined number of poles during commutator motor operation and to the second predetermined number of poles during induction motor operation; and

(c) first commutator means connected to said first rotor phase winding means for receiving electric power during commutator motor functioning.

4,271,381
WINDSHIELD WIPER MOTOR CIRCUIT

Joachim Munz, Gemmrigheim; Hans Prohaska, and Horst Rachner, both of Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 97,914
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851727
Int. Cl.³ B60S *1/04*
U.S. Cl. 318—282 **9 Claims**



1. A windshield wiper circuit arrangement comprising:

an electric drive motor which is reversible with respect to the direction of rotation;

a voltage source having first and second terminals each of a different polarity;

a reversing switch interposed between said motor and said voltage source and having a first changeover bridging contact in cooperative switching relationship with a first pair of stationary contacts, and a second changeover bridging contact in cooperative switching relationship with a second pair of stationary contacts, said bridging contacts being carried by and simultaneously operable by a relay;

limit switch means for characterizing first and second rotational end positions of said motor; and store means for controlling said relay, and for storing a representation of the switching state of said relay in at least one of said end positions, said store having a set input and a reset input;

said limit switch means alternately connecting one of said first pair of stationary contacts to said first and second terminals and concurrently alternately connecting one of said second pair of stationary contacts to said second and first terminals;

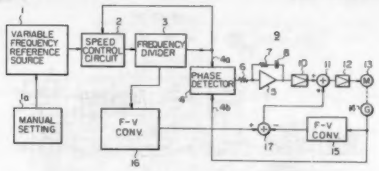
said set input and said reset input receiving control signals from said limit switch when said limit switch indicates said first or second position;

the other of said stationary contacts being connected to the same terminal of said voltage source.

4,271,382
SPEED CONTROL CIRCUIT FOR PHASE-LOCKED LOOP MOTOR DRIVE SYSTEMS

Toshinobu Maeda, and Yoshifumi Matsuoka, both of Kodoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 25, 1979, Ser. No. 51,855
Claims priority, application Japan, Jun. 27, 1978, 53-78153
Int. Cl.³ H02P 5/16
U.S. Cl. 318—318 **7 Claims**

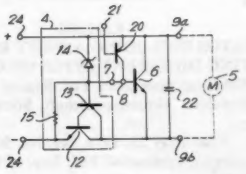


1. An oscillator circuit having fine frequency adjustment control comprising a pulse generator for generating pulses at high and low frequencies; a frequency divider having an input responsive to the pulse generator for dividing said pulses; a bistable circuit responsive to an output signal from said frequency divider to generate a first binary state signal; a programmable counter having a resettable count value for counting said low frequency pulses in response to the occurrence of said first binary state signal to cause said bistable circuit to generate a second binary state signal when said count value is reached thereby defining a desired period; means for selectively generating a speed increment and a speed decrement command signal; means for normally applying said low frequency pulses to said frequency divider; means responsive to said speed increment command signal for applying a train of said high frequency pulses in place of said low frequency pulses to said frequency divider during said defined period and means responsive to said speed decrement command signal for inhibiting the input of said frequency divider during said defined period.

4,271,383
DC MOTOR CONTROL CIRCUIT

Takeshi Endo, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1977, Ser. No. 821,874
Claims priority, application Japan, Aug. 6, 1976, 51-105134
Int. Cl.³ H02P 3/12
U.S. Cl. 318—375 **12 Claims**

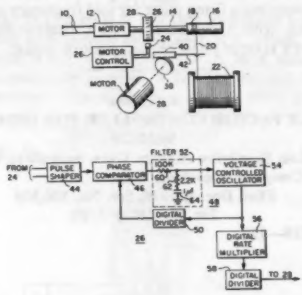


1. In a DC motor control circuit comprising a DC motor adapted to be driven in response to an operating voltage applied thereto and braking means defining a current path coupled in parallel with said DC motor for selectively braking said DC motor in response to a control signal applied thereto, the improvement comprising DC supply means for producing a DC signal, constant voltage means coupled intermediate said DC supply means and the parallel connection of said braking means and DC motor for selectively applying a constant operating voltage to said DC motor, said constant voltage means being adapted, in response to a control signal applied thereto, to cut-off the application of a constant operating voltage to said DC motor, and control means coupled directly to said constant voltage means and directly to said braking means for coincidentally applying a control signal to said constant voltage means and to said braking means to coincidentally brake said DC motor and cut-off the application of said operating voltage to said DC motor.

4,271,384
SYNCHRONOUS MOTOR DRIVE

Thomas E. Beling, Saxonville, and Leopold Bric, Braintree, both of Mass., assignors to Sigma Instruments, Inc, Braintree, Mass.

Filed Nov. 10, 1977, Ser. No. 850,201
Int. Cl.³ H02P 5/50; G05B 19/40
U.S. Cl. 318—685 **21 Claims**



1. For a synchronous motor capable of reaching a given speed within a predetermined time, a motor drive operable from a voltage source repetitively variable at a frequency corresponding to the given speed, comprising:

a phase detector for responding to the source,

a filter,

a voltage controlled oscillator,

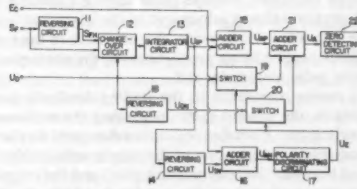
feedback means,

said phase detector, said filter, said voltage controlled oscillator, and said feedback means being connected successively to each other in a phase locked loop with said filter including integrating means having a time constant corresponding to the predetermined time.

4,271,385
CONTROL SYSTEM FOR COMMUTATORLESS MOTOR

Noboru Azusawa, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,596
Claims priority, application Japan, Aug. 22, 1977, 52-99569
Int. Cl.³ H02P 5/16
U.S. Cl. 318—722 **7 Claims**



1. In a control system for a commutatorless motor, comprising a synchronous motor having a polyphase armature winding and a field winding, a frequency converter for supplying AC

current of variable frequency to said armature winding, a speed detector for detecting the rotational speed of said synchronous motor and for producing a speed signal different in polarity depending on the rotational direction of said motor, and a position detector means for detecting a position signal based on the rotational speed of said synchronous motor; the improvement comprising phase-shifting circuit means including integrator circuit means for integrating said speed signal in synchronism with said position signal and adapted to shift the phase of said position signal by the maximum of 180 degrees both in the lead and lag direction in response to a phase control signal and an integrated signal delivered from said integrator circuit means, and logic circuit means supplied with a phase-shifted position signal delivered from said phase-shifting circuit means and including reversing circuit means for producing a reverse phase-shifted position signal resulting from reversing in polarity the phase-shifted position signal, said logic circuit means generating a firing pulse for said frequency converter in accordance with a combination of a phase-shifted position signal and a reverse phase-shifted position signal.

4,271,386

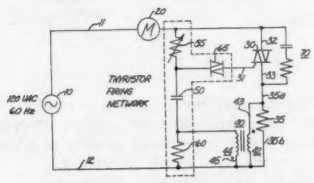
POWER FACTOR CONTROLLER FOR INDUCTION MOTOR

Maw H. Lee, Broadview Heights, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Dec. 5, 1979, Ser. No. 100,516

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—729 **8 Claims**



1. An electronic controller for regulating power applied by an AC supply to an AC induction motor, comprising:

a gate-controlled semiconductor AC switching means connected in electrical series relationship with the AC supply and the induction motor, power being applied to the motor via the AC switching means;

means for detecting alternating direction load current pulses through the motor when the AC switching means is in a conducting state, the means for detecting including a resistor means in series with the motor, the resistor means providing a proportional voltage pulse for each load current pulse;

a transformer means having a primary side and a nonlinearly responding secondary side, the proportional voltage pulse provided by the resistor means being impressed across the primary side, the nonlinearly responding secondary side, in response to the proportional voltage, providing an induced secondary voltage pulse having a trailing feedback portion existent subsequent to the impressed voltage pulse across the primary side, the amplitude of the trailing feedback portion being proportional to the corresponding current pulse amplitude; and

control means responsive to the trailing feedback portion amplitude, the control means triggering the semiconductor switch into a conducting state subsequent to the preceding zero crossing point of the supply voltage, the time period between the zero crossing point and the triggering being poroportional to the amplitude of the feedback portion, the switching means switching to a nonconducting state generally at the trailing edge of each load current pulse.

4,271,387

METHOD AND SYSTEM OF CONTROLLING EFFECTIVE VALUE OF ALTERNATING CURRENT

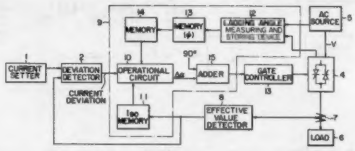
Kuniaki Mukai, Hachioji, and Kouichi Hyodo, Chofu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 13, 1979, Ser. No. 29,938

Claims priority, application Japan, Apr. 20, 1978, 53-47078; Apr. 25, 1978, 53-48977

Int. Cl.³ G05F *1/455*

U.S. Cl. 323—241 **5 Claims**



1. In a method of controlling the effective value of alternating current supplied to a load from a source of alternating current through controlled semiconductor switching elements which are connected in parallel opposition, wherein the effective value of the alternating current is controlled by comparing a reference current with an effective value of the load current actually measured, the improvement which comprises the steps of:

producing data $(\Delta I/\Delta\alpha)/I_{90}$

where ΔI represents an increment of the load current, $\Delta\alpha$ an increment of the ignition angle α of said controlled semiconductor switching elements and I_{90} the effective value of the load current at an ignition angle of 90°,

calculating $\Delta\alpha$ according to an equation

$$\Delta\alpha = \frac{\text{current deviation} \times K}{I_{90} \times (\Delta I/\Delta\alpha)/I_{90}}$$

where K is a constant smaller than 1,

adding said $\Delta\alpha$ to an ignition angle α_1 in a preceding half cycle to determine a new ignition angle, and

controlling said controlled semiconductor switching elements according to said new ignition angle.

4,271,388

APPARATUS INCLUDING A SHIFT REGISTER FOR TESTING DIFFERENT TYPES OF CABLE SETS

Wolfgang Schäling, Mannheim, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 23, 1978, Ser. No. 908,728

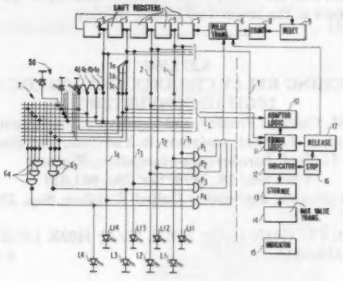
Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723536

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—51 **12 Claims**

1. An apparatus for testing different cable sets having several conductor means comprising shift register means providing one output each for each individual conductor means, synchronizing line means associated with each individual conductor means, each output of the shift register means being coupled with an input of the associated individual conductor means and an input of the associated synchronizing line means, and means coupled to an output of the individual conductor means and an output of the associated synchronizing line means for indicating proper operation of the individual conductor means in

response to the shift register means providing an output to the associated individual conductor means and the associated synchronizing line means for testing of the cable sets, each individual conductor means including at least one of an individual conductor and a group of interconnected conductors, a respective one of the synchronizing line means being associated with each of the individual conductors and with each group of interconnected conductors, the shift register means providing one output for each respective individual conductor and one output for each respective group of interconnected



conductors, and wherein each of the group of interconnected conductors is arranged for having an input thereof coupled with the respective output of the shift register means, and further comprising matrix means with one cross-over point for at least each output of each conductor of the group of interconnected conductors, logic gate circuit means being connected with each cross-over point corresponding to a respective group of interconnected conductors for providing an output indicative of proper operation of the group of interconnected conductors.

4,271,389

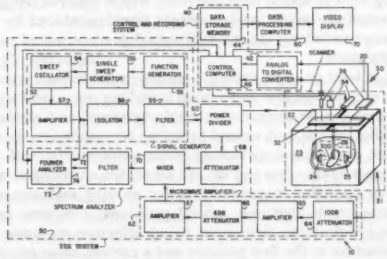
METHOD AND APPARATUS FOR PHYSIOLOGIC FACSIMILE IMAGING OF BIOLOGIC TARGETS WITHOUT MULTIPATH CONTAMINATION USING REMOTE MICROWAVE INTERROGATION

John H. Jacobi, Bowie, and Lawrence E. Larsen, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 41,374, May 22, 1979, which is a continuation-in-part of Ser. No. 891,256, Oct. 14, 1977, which is a continuation-in-part of Ser. No. 842,137, Oct. 14, 1977, Pat. No. 4,135,131. This application Jun. 4, 1979, Ser. No. 45,442

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58.5 A **19 Claims**



1. A microwave imaging method of producing a physiologic facsimile image of a biological target on an image display device in which multipath contamination is minimized, comprising the steps of:

(a) for each one of a plurality of sample locations which are spaced so as to define a two-dimensional array, producing a time delay spectrum wherein the frequency of each spectral ordinate represents the instantaneous differential propagation delay between a first microwave signal which has been propagated through the target and a second microwave signal, initially corresponding to said first microwave signal, which has been propagated through means having a predetermined propagation delay, and measuring the amplitude of the spectral ordinate corresponding to the direct ray path of propagation through the target, so as to obtain a set of data;

(b) processing said set of data to obtain a corresponding set of control signals for the display device; and

(c) producing a two-dimensional image array on the display device using said set of control signals, and thereby obtaining the facsimile image.

4,271,390

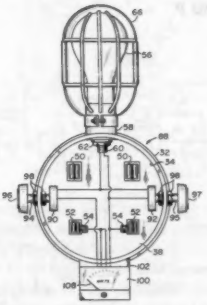
ELECTRIC WATT-HOUR METER TESTING DEVICE

John C. Canu, 4045 Delmar Dr., Laurel, N.Y. 11948

Continuation of Ser. No. 948,693, Oct. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 841,660, Oct. 13, 1977, abandoned. This application Jan. 29, 1980, Ser. No. 116,533

Int. Cl.³ G01R *11/32*

U.S. Cl. 324—74 **5 Claims**



1. A device to check the accuracy of a watt-hour meter at its operational site in which the meter has electric supply line contacts and electric load contacts and is adapted to be detachably supported on a supporting socket in electrical engagement with respective electric supply line contacts and electric load contacts on the supporting socket such that the electric supply line contacts of the supporting socket and meter are electrically connected with an electric supply line and the electric load contacts of the meter and supporting socket are connected with the load of the operational site;

said device comprising a dielectric base that is adapted to be detachably supported on the supporting socket to be interposed between the meter and the supporting socket,

electric supply line contacts on said base for electrical conducting engagement with the electric supply line contacts on the supporting socket and for electric conducting engagement with the electric supply line contacts of the meter,

electric isolating contact means on said base for receiving the electric load contacts of the meter such that when the meter is detached from the supporting socket to enable the base to be mounted on the supporting socket so that the meter is then able to be mounted on the base, said electric supply contacts on said base complete an electric circuit from the supply line through the electric supply line contacts of the supporting socket, through said base, and then through the meter with said electric isolating contact means fully electrically isolating the electric load contacts of the meter from the electric load of the operational site

and also from preventing electrical contact between the load contacts of the meter and the electric load contacts of the supporting socket such that said base insulates the meter from the supporting socket and from the load of the operational site,

electrical load means having a predetermined wattage rating at a rated line voltage connected to said load contacts of said meter,

and electrical measuring means connected to said load contacts of said meter for determining the power consumed by said electrical load means,

the arrangement being such that when said device is mounted on said supporting socket and said meter is mounted on said base, only said electrical load means and said electrical measuring means are connected to said load contacts of said meter.

4,271,391
DIGITAL VOLTMETER WITH ELECTRO-OPTICAL INDICATION OF THE WAVEFORM

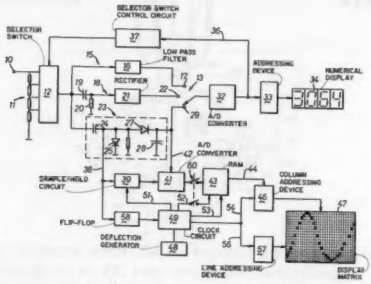
Allan R. Kmetz, Chatham, N.J., assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Nov. 1, 1979, Ser. No. 90,104

Claims priority, application Switzerland, Nov. 24, 1978, 12047/78

Int. Cl.[3] **G01R** *19/16, 15/08*

U.S. Cl. 324—103 P **10 Claims**



1. A digital voltmeter device with an electro-optical display of an input waveform, comprising:

peak detector means coupled to receive said input waveform for determining the peak-to-peak voltage of said input waveform;

first analog-to-digital converter means coupled to receive the output of said peak detector means for converting said output from analog form to digital form;

first addressing means coupled to receive the digital output signal from said analog-to-digital converter means for converting said digital output signal into a numerical address signal;

liquid crystal numerical display means for receiving said numerical address signal, and for converting said numerical address signal into a visible display;

sample and hold circuit means coupled to receive said input waveform, for sampling said input waveform at a controlled rate;

second analog-to-digital converter means coupled to receive the sampling signal output of said sample-and-hold circuit means and to receive the output of said peak detector means, for converting said sampling signal into digital form, said second analog-to-digital converter means utilizing the output of said peak detector means as a scale factor;

second addressing means coupled to receive the digital output signal of said second analog-to-digital converter means, for converting said digital output signal into a line address signal and a column address signal; and

electro-optical display means coupled to receive said line and column address signals from said second addressing means for converting said addressing signals into a visible display, said display means including a plurality of liquid crystal elements arranged in lines and columns;

said digital voltmeter device displaying said input waveform such that the upper peak value of said input waveform appears at the upper line of said electro-optical display means and the lower peak value of said input waveform appears at the lower line of said display.

4,271,392
LATCHING RELAY CIRCUITS AND ANALOG TO DIGITAL CONVERTERS

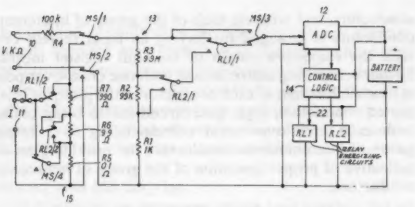
Stephen H. Outram, Frimley, and Geoffrey A. Luckhurst, Yateley, both of England, assignors to The Solartron Electronic Group Limited, Farnborough-Hampshire, England

Filed Sep. 18, 1978, Ser. No. 943,028

Claims priority, application United Kingdom, Sep. 29, 1977, 40573/77

Int. Cl.[3] **G01R** *15/08;* **H01H** *51/22;* **H03K** *13/02*

U.S. Cl. 324—115 **6 Claims**



1. An auto-ranging analog-to-digital converter, comprising:

a range-swiching input circuit for receiving an analog input signal to be converted and for producing, in response to said analog input signal, an analog output signal whose magnitude lies within a predetermined range of values and is representative of the magnitude of the analog input signal, said range-switching circuit including at least one relay having first and second switching states;

an analog-to-digital conversion circuit connected to receive the analog output signal produced by the range-switching circuit, for converting said analog output signal into a digital signal representative of the magnitude of the analog input signal; and

a control circuit responsive to said digital signal to produce a control signal operative to select the respective switching state of said at least one relay which tends to bring the magnitude of the analog output signal produced by the range-switching circuit within said predetermined range of values;

said at least one relay being a latching relay which is stable in each of said first and second switching states, and which comprises an armature movable between, and stable in, either of first and second positions corresponding to said first and second switching states respectively, and coil means having first and second inputs for receiving respective operating current pulses for moving said armature between its first and second positions, a current pulse received at the first input being effective to move the armature to the first position and a current pulse received at the second input being effective to move the armature to the second position; and

said control circuit including pulse generator means for producing control pulses and a relay operating circuit responsive to said control pulses and said control signal to produce said operating current pulses and to apply them

to a respective one of the first and second inputs of the coil means in dependence upon said control signal.

4,271,393

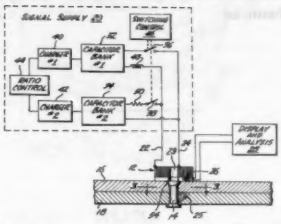
APPARATUS AND METHOD FOR EDDY CURRENT DETECTION OF SUBSURFACE DISCONTINUITIES IN CONDUCTIVE BODIES

Karl A. Hansen, and Iver G. Hendrickson, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 29, 1978, Ser. No. 974,356

Int. Cl.³ G01R 33/12

U.S. Cl. 324—240 **15 Claims**



1. Eddy current inspection apparatus for detecting the presence of subsurface regions within a body wherein the region to be detected is of a different electrical conductivity than portions of said body that surround said region to be detected, said eddy current inspection apparatus comprising:

drive coil means positionable on the surface of said body to be inspected, said drive coil means being configured for inducing a magnetic field that is directed inwardly into an inspected region of said body in response to an applied drive signal;

electrical signal supply means interconnected with said drive coil for supplying said drive signal, said electrical signal supplying means including means for supplying said drive signal as a current pulse having a relatively long rise time and a substantially shorter fall time; and

magnetic flux detection means positionable on said surface of said body being inspected at a location proximate to said drive coil means, said magnetic flux detection means for supplying a signal representative of the eddy currents produced in said body by that portion of said drive current exhibiting said short fall time.

4,271,394

AMPLIFIER CIRCUIT

Arthur J. Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,987

Int. Cl.³ H03F 3/45

U.S. Cl. 330—258 **19 Claims**

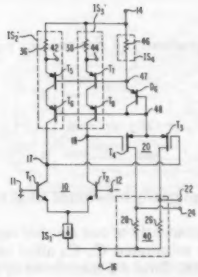
1. Circuitry in combination with first and second bipolar transistors having matched conduction characteristics being connected in a first long-tailed-pair configuration, and having respective base electrodes for receiving an input signal therebetween, said circuitry for obtaining substantially the maximum voltage gain available from said first long-tailed-pair configuration while introducing substantially no additional source of input offset potential error between the respective base electrodes of said first and second transistors, said circuitry comprising:

first and second supply terminals for receiving an operating voltage therebetween;

first current supply means, included in said first long-tailed-pair configuration, for supplying combined quiescent emitter currents, connected at one of its ends to an interconnection between the emitter electrodes of said first and second transistors and connected at the other of its ends to said first supply terminal;

second current supply means comprising first and second constant current generator means connected at respective first ones of their ends for supplying currents to the collector electrode of said first transistor and to the collector electrode of said second transistor, respectively, and connected at respective second ones of their ends to said second supply terminal, said first and second constant current generator means having respective source resistances which are high compared to the collector resistances of said first and second transistors;

third and fourth, field-effect transistors of like conductivity type to each other having respective gate electrodes to which the collector electrodes of said first and second transistors respectively connect, having respective source and drain electrodes, and exhibiting respective gate input resistances which are high compared to the collector resistances of said first and second transistors;



means for connecting said third and fourth transistors in a second long-tailed-pair configuration including means for supplying their combined source currents connected at one of its ends to an interconnection between the respective source electrodes of said third and fourth transistors and connected at the other of its ends to one of said first and second supply terminals, and including

means for connecting the drain electrodes of said third and fourth transistors to the other of said first and second supply terminals; and

means for adjusting the relative levels of the output currents of said first and second current supply means including

means for generating a feedback signal responsive to the common-mode potentials at the collector electrodes of said first and second transistors, and

means for applying said feedback signal to one of said first and second current supply means to complete a degenerative feedback circuit.

4,271,395

DYESTUFF LASER

Uwe Brinkmann; Helmut Telle, both of Cologne, and Roderich Raue, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

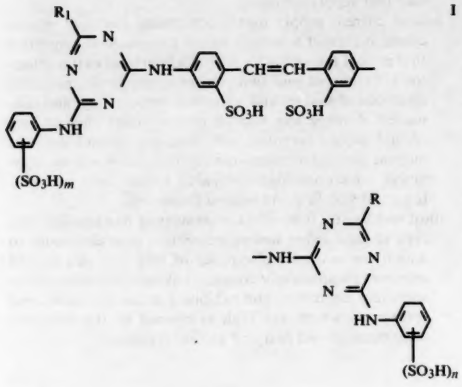
Filed Jan. 3, 1978, Ser. No. 866,521

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1977, 2700293

Int. Cl.² H01S 3/20

U.S. Cl. 331—94.5 L **4 Claims**

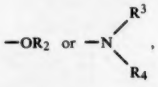
1. Dyestuff laser consisting of a reservoir, with a laser dyestuff solution contained therein, and a pump light source connected thereto, which is capable of exciting the dyestuff solution to produce an emission, characterised in that the dyestuff solution contains a dyestuff which, in the form of the free acid corresponds to the general formula



I

wherein

R and R_1 independently of one another represent



R_2 denotes an optionally substituted alkyl radical with 1–4 C atoms,

R_3 and R_4 independently of one another represent hydrogen or optionally substituted C_1–C_4 alkyl or conjointly with the nitrogen can form a 5-membered or 6-membered heterocyclic ring and

m and n denote 1 or 2, and

wherein

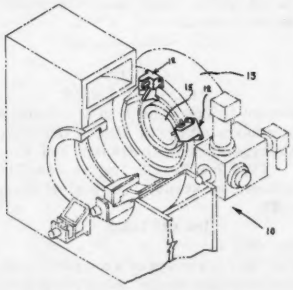
the aromatic radicals contained in the formula can be further substituted, in a solvent which does not interfere with the emission, at a concentration, which emits laser beams, of, preferably, 10^{-2} to 10^{-5} mols/liter.

4,271,396

INCIDENT RADIATION ABSORBER/REFLECTOR ASSEMBLY

Donald G. Brown, Newbury Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1979, Ser. No. 1,330
Int. Cl.³ H07S 3/08
U.S. Cl. 331—94.5 C **9 Claims**



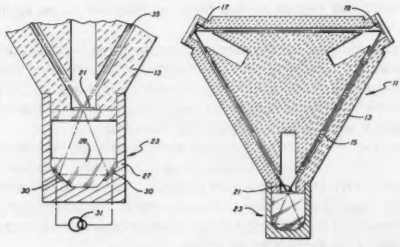
1. An incident radiation absorber/reflector assembly comprising a mounting housing, an absorber body, said body being made of a radiation absorbing material and having a cylindrical cavity formed substantially in the center thereof, an entrance opening formed within said body connected to said cylindrical cavity by a tapered passageway offset from the longitudinal axis of said cylindrical cavity, a reflector element, said reflector element protruding from said body at a predetermined angle so as to reflect incident radiation into said entrance opening, said body and said reflector element being adjustably secured to said mounting housing whereby said incident radiation is intercepted by said reflector element and directed by said reflector element into said cavity where it is substantially absorbed by said absorber body, and a plurality of cooling channels located about said cylindrical cavity, a cooling passageway located within said reflector element and means located within said mounting housing for feeding coolant to said cooling channels.

4,271,397

NONRECIPROCAL PHASE SHIFTER FOR A RING LASER GYRO

John C. Stiles, Morris Plains, N.J., and Hubert F. Elbert, Tucson, Ariz., assignors to The Singer Company, Little Falls, N.J.

Filed Aug. 9, 1979, Ser. No. 65,388
Int. Cl.³ H01S 3/10
U.S. Cl. 331—94.5 C **12 Claims**



1. A nonreciprocal phase shifting apparatus for a ring laser gyro, said gyro including a block having a ring resonator cavity having at least three corners, and including primary and secondary and tertiary reflecting corner mirrors disposed respectively in said three corners, said primary mirror being adapted to pass therethrough a part of each of said beams, said primary and secondary and tertiary mirrors having planes arranged to support a main clockwise beam and a main counter clockwise beam in said cavity, said phase shifting apparatus comprising:

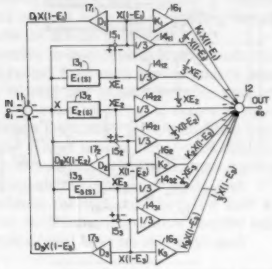
(a) an optical resonator directing the part of each of the beams passing through said primary mirror in a closed path, directing a portion thereof back through the primary mirror into its respective main beam; and

(b) a nonreciprocal phase shifter inserted in said closed path; and wherein said optical resonator comprises a substrate for supporting said primary mirror; first and second planar mirrors, the planes thereof intersecting said plane of said primary mirror with equal internal angles, said angle being such that a part of the respective beam passing through said primary mirror will strike one of said first and second mirrors, be reflected to the other and from the other back through said primary mirror and into said respective main beam.

4,271,398
TONE CONTROL DEVICE

Ryozi Higashi, and Hiroyuki Hirano, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,090
Claims priority, application Japan, Nov. 30, 1978, 53 147222; Dec. 8, 1978, 53-150956
Int. Cl.³ H03H 7/03, 11/06; H04B 3/04
U.S. Cl. 333—28 T 4 Claims

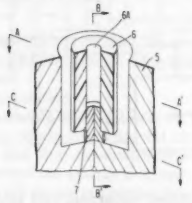


1. A tone control device comprising: a plurality of bandpass filter having different center frequencies from one another and having variable characteristics for tone control; a signal sum circuit for summing output signals of said bandpass filters and an input signal, an output signal from said sum circuit being coupled to inputs of said bandpass filters; and a signal sum and difference circuit, outputs of said bandpass filters being coupled to inverting input terminals of said sum and difference circuit and said output signals from said sum circuit being coupled to a non-inverting input terminal of said sum and difference circuit, an output signal from said sum and difference circuit forming the output signal of said device.

4,271,399
DIELECTRIC RESONATOR FOR VHF TO MICROWAVE REGION

Hideo Morita, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1979, Ser. No. 32,822
Claims priority, application Japan, Apr. 24, 1978, 53/48954
Int. Cl.³ H01P 7/10
U.S. Cl. 333—219 5 Claims

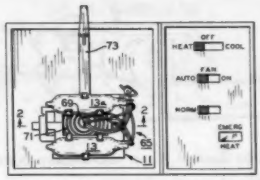


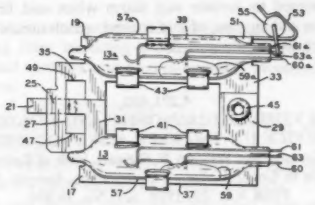
1. A dielectric resonator comprising: an elongated dielectric member axially hollow at least in part of its cross section; a conductor surrounding said dielectric member; and a metal rod inserted into the hollow part of said dielectric member and coupled to said conductor, said metal rod having a length shorter than said hollow part, leaving a part of the overall length of said dielectric member without said rod inserted, so that resonance is supported in the TEM mode and the TE_{10g} mode (g is a positive number) at said part of said overall length.

4,271,400
CRADLE ASSEMBLY FOR USE IN A THERMOSTAT

Dann W. Denny, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 750,279, Dec. 13, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,509
Int. Cl.³ H01H 37/04
U.S. Cl. 337—380 19 Claims





19. A cradle assembly for use in a thermostat comprising a plurality of switch means respectively adapted for switching operation at predetermined switch points, a plurality of leg means for supporting said switch means and including a pair of generally opposite end portions with an adjacent one of said opposite end portions of each of said leg means being pivotally arranged with respect to each other so that said leg means are pivotally movable toward adjusted positions to establish the predetermined switch points of said switch means, respectively, the adjacent other of said opposite end portions of said each leg means including at least one integral part conjointly pivotally movable with a respective one of said leg means into abutting engagement with another of said at least one integral part on another of said other opposite end portions so as to positively limit the pivotal movement of said leg means toward their respective adjusted positions, and said another of said at least one integral part including a pair of means predeterminately spaced apart for the abutting engagement with said at least one integral part.

4,271,401
SAFETY TRAILER HITCH

Santino D. Meo, Oakland, Calif., assignor to Tri Delta Industries, Inc., Hayward, Calif.

Filed Aug. 9, 1979, Ser. No. 65,207
Int. Cl.³ B60D 1/12; G08B 19/00
U.S. Cl. 340—52 D 4 Claims

1. A device for coupling a trailer to a tow vehicle comprising:

A. means for mechanically connecting said trailer to said tow vehicle including a releasable latch to secure said mechanical connection means;

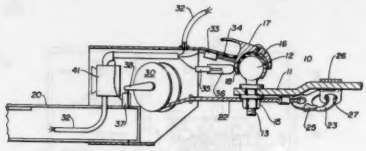
B. a backup connection between said trailer and said tow vehicle which is adapted to releasably secure said trailer to said tow vehicle;

C. an alarm adapted to be connected to a source of electric energy;

D. first switch means which is normally open and is positioned to be closed wherein said trailer is mechanically coupled to said tow vehicle;

E. second switch means which is normally closed and is positioned to be opened when said latch is closed to secure said mechanical connection means;

F. third switch means which is normally closed and is positioned to be opened when said backup connection is secured; and



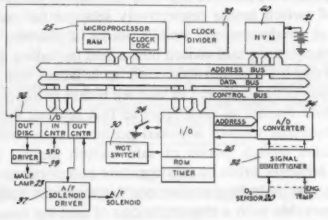
G. said second switch means and said third switch means connected in parallel and in series with said first switch means and said alarm, and said source of electric energy connected to actuate said alarm when said first switch means and any one of said second switch means and third switch means are closed.

4,271,402

MOTOR VEHICLE DIAGNOSTIC AND MONITORING DEVICE HAVING KEEP ALIVE MEMORY

John L. Kastura, and William R. Stewart, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1979, Ser. No. 70,885
Int. Cl.[3] **G06F** *11/30, 15/20;* **G08B** *21/00*
U.S. Cl. 340—52 F **3 Claims**



1. A diagnostic monitoring system for monitoring the conditions of predetermined parameters in a motor vehicle having a driving compartment comprising, in combination:

a memory nonvolatile as to engine operation having locations for storing detected fault conditions;

fault indicating means in the vehicle driving compartment effective to signal the occurrence of a fault condition;

means effective to (a) detect fault conditions in the predetermined parameters, (b) energize the fault indicating means during detected fault conditions, and (c) store the fault conditions detected in respective locations in the nonvolatile memory;

means effective to respond to a diagnostic interrogation signal for identifying the specific faulted conditions stored in the nonvolatile memory; and

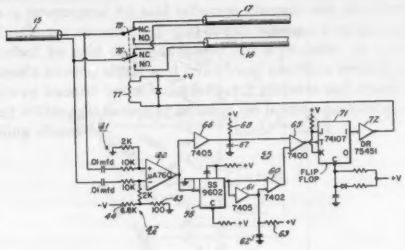
timer means effective to clear from the nonvolatile memory locations at least the stored detected fault conditions for which the timed period since the last detected fault condition exceeds a time that spans a substantial number of engine operating events since detection of a fault condition, whereby old nonrecurring self-correcting faults are cleared from memory and accordingly are not indicated in response to a diagnostic interrogation signal.

4,271,403

COAXIAL CABLE SWITCHING CIRCUIT

Verne L. Severson, Minneapolis, and Charles E. Tomfohrde, Minnetonka, both of Minn., assignors to Data 100 Corporation, Minnetonka, Minn.

Filed Feb. 21, 1978, Ser. No. 879,744
Int. Cl.[3] **H04Q** *9/00;* **H04N** *5/22*
U.S. Cl. 340—147 C **3 Claims**



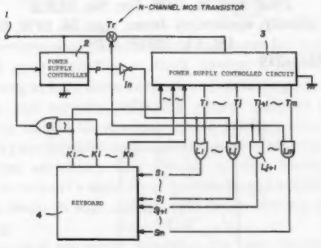
1. A high input impedance pulse detecting circuit for receiving signals, comprising a coaxial cable having an outer conductor and a shield, said outer conductor and shield forming first and second input terminals respectively, differential comparator means having first and second inputs, separate high input impedance means connecting said input terminals to said inputs and having substantially the same impedance, each of said input impedance means comprising a series capacitor and a shunt resistor and a source of direct current connected to offset the direct current level at one of said inputs with respect to the other said input.

4,271,404

POWER SUPPLY CONTROLLER IN A KEYBOARD-EQUIPPED APPARATUS SUCH AS AN ELECTRONIC CALCULATOR

Shinichi Tanaka, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1978, Ser. No. 888,865
Claims priority, application Japan, Mar. 29, 1977, 52/35657
Int. Cl.[3] **G06F** *3/02, 1/00*
U.S. Cl. 340—365 S **5 Claims**



1. In a keyboard equipped apparatus, said keyboard including a plurality of keys, said apparatus including a central processing unit for processing data introduced via said keyboard, a display for displaying the results of the processing of the data introduced via said keyboard, and a power source means for energizing said central processing unit, said central processing unit being precluded from receiving power energy from said power source means when said keyboard equipped apparatus is not utilized after a predetermined time period, the improvement comprising:

connecting means responsive to actuation of a selected one of said keys on said keyboard for connecting said central

processing unit and said display to said power source means thereby supplying power from said power source means to said central processing unit in response to actuation of said one of said keys on said keyboard, said one of said keys also introducing a portion of said data for processing by said central processing unit upon actuation thereof, said connecting means including,

means responsive to the absence of power energy supplied to said central processing unit from said power source means for generating control logic signals in response thereto, one of said control logic signals passing through said one of said keys on actuation thereof,

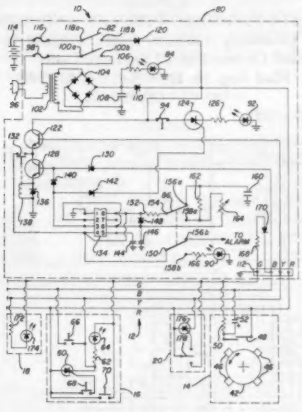
means responsive to said control logic signals, to said power energy supplied from said power source means, and to actuation of said one of said keys on said keyboard for generating an enabling signal in response thereto, and

switching means responsive to said enabling signal for connecting said power source means to said central processing unit, said control processing unit generating a plurality of strobe signals in response thereto, each of said strobe signals passing through said keys on said keyboard in response to each actuation thereof thereby uniquely identifying each of said keys on said keyboard.

4,271,405
ALARM CONTROL SYSTEM

Lawrence P. Kitterman, 7112 Joe Will, Grapevine, Tex. 76051

Filed Jan. 3, 1978, Ser. No. 866,377
Int. Cl.³ G08B *13/12, 29/00*
U.S. Cl. 340—512 **26 Claims**



1. In a premises having at least one port of entry, an improved alarm control system for activating an alarm device comprising:

a master control station;

a bus line originating from said master control station and having a first conductor, a second conductor and a third conductor, said first conductor energizing said second conductor when the system is armed;

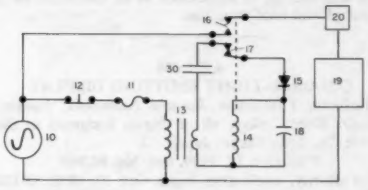
at least one sensor means connected to said bus line, each for sensing an alarm condition and transmitting an alarm signal through said bus line by momentarily energizing said third conductor;

said master control station comprising first means actuated upon energization of said first and second conductors, second means actuated upon actuation of said first means and energization of said third conductor, switch means actuated upon actuation of said second means in response to the transmitted alarm signal for activating the alarm device and timer means responsive to actuation of the switch means for deactuating said second means and said switch means to deactivate the alarm device and thereby reinitialize the entire system after an adjustable, predetermined time interval established by the timer means following each actuation of said switch means.

4,271,406
BED WETTING TATTLER

Reginald D. Wilson, 2601 Roslyn Ave., Baltimore, Md. 21216

Filed Jul. 31, 1979, Ser. No. 62,489
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—604 **11 Claims**



1. A moisture sensing apparatus, comprising:

a latching relay including a coil, a set of normally open electrical contacts, and a set of normaliy closed electrical contacts;

a source of electrical current;

a first electrode electrically connected to said source of electrical current;

a second electrode electrically connected to said relay coil via said normally closed set of relay contacts;

said first and second electrodes fabricated from magnetic material with one of said contacts permanently magnetized;

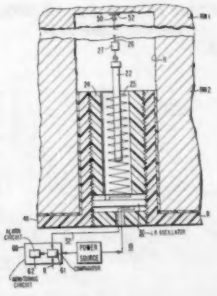
said first and second electrodes positioned adjacent to each other but electrically separated by a spacer creating a space therebetween which may be electrically closed by the presence of an electrolyte; and

an alarm means responsively connected to said set of normally open contacts.

4,271,407
TUNNEL ROOF MONITOR EMPLOYING AN INDUCTION COIL EXTENSOMETER

Robert F. Kehrman, Louisville; Arnold J. Farstad; Michael G. Gibbons, both of Boulder, and David L. Swigert, Fort Collins, all of Colo., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1979, Ser. No. 93,324
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—690 **8 Claims**



1. Apparatus for detecting the movement of a tunnel roof structure to warn of potential roof collapse, comprising:

a detector means including a core element positioned within and inductively coupled to a coil element, said detector means being positioned within a borehole in the roof structure of a tunnel, said core element being secured within a first rock formation and said coil element being secured within a second rock formation such that movement of either of said rock formations with respect to the other results in a relative displacement of said core element with respect to said coil element, said displacement producing a change in the inductance of said detector means, and

means operatively connected to said detector means to monitor said change of inductance as an indication of movement of said roof structure.

4,271,408

COLORED-LIGHT EMITTING DISPLAY

Toru Teshima, Yokohama; Jun-ichi Nishizawa, Sendai, and Yasunori Kishi, Tokyo, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,384

Claims priority, application Japan, Oct. 17, 1978, 53-127726; Oct. 17, 1978, 53-127727; Oct. 17, 1978, 53-127728; Oct. 17, 1978, 53-127729

Int. Cl.³ G08B 5/36

U.S. Cl. 340—702 **20 Claims**

1. A colored light emitting display device comprising:

a substrate carrying thereon electric connection wirings;

a reflector member disposed on said substrate and having thereon a plurality of unit mirror sections of a similar shape; and

a plurality of light-emitting diodes disposed on at least part of all of said unit mirror sections and connected to form a display circuit through said electric connection wirings.

4,271,409

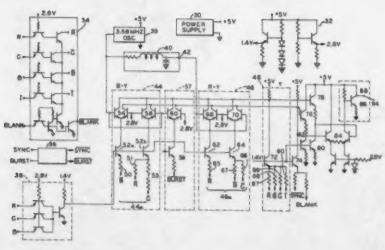
APPARATUS FOR CONVERTING DIGITAL DATA INTO A VIDEO SIGNAL FOR DISPLAYING CHARACTERS ON A TELEVISION RECEIVER

Paul D. Filliman, Fort Wayne, Ind., assignor to The Magnavox Company, Knoxville, Tenn.

Filed May 19, 1978, Ser. No. 907,373

Int. Cl.³ G06F 3/14

U.S. Cl. 340—703 **3 Claims**



1. Apparatus for generating a video signal in a standard NTSC format from a digital signal source, said source providing a first group of binary words for indicating the red, green and blue signal components of a picture detail, and a second group of binary words for indicating the occurrence of a horizontal synchronization interval, vertical synchronization interval, a blanking interval, and a burst signal, comprising:

(a) matrix means for converting said first group of binary words representing the red, green and blue components of said picture detail into a d.c. voltage, said d.c. voltage representing the luminance level of said picture detail;

(b) a signal source for providing first and second signals at 3.58 mHz, said signals having a phase difference of 90°;

(c) a first balanced modulator for receiving said first signal, said modulator having an output signal determined by said first group of binary words;

(d) a second balanced modulator for receiving said second signal and controlling the magnitude of said second signal, said balanced modulator providing a signal having a magnitude proportionally controlled by said first group of binary words;

(e) means for modifying said luminance signal when said digital signal source indicates a synchronization signal or a blanking signal are to occur; and

(f) means for combining the output of said modulators and said matrix whereby a video signal is produced specifying the brightness and color of said picture detail in accordance with an NTSC format.

4,271,410

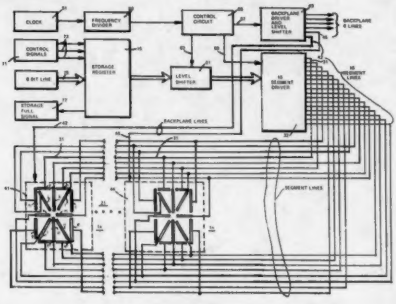
LCD DATA PROCESSOR DRIVER AND METHOD

Donald G. Crawford, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 10, 1978, Ser. No. 932,590

Int. Cl.³ G08B 5/36

U.S. Cl. 340—765 **7 Claims**



1. A liquid crystal device multiplex driver circuit capable of operating arrays of many characters comprised of a plurality of segments each with each character having a backplane, comprising:

means for developing first, second, and third levels of backplane voltages, characterized by:

a reference level backplane voltage;

a higher than reference level backplane voltage;

a lower than reference level backplane voltage;

means for developing high and low segment voltages respectively having levels between said reference backplane voltage and said higher than reference backplane voltage and between said reference backplane voltage and said lower than reference backplane voltage;

said higher than reference and said lower than reference voltages being alternating polarity voltages and said high and low segment voltages being alternating polarity voltages;

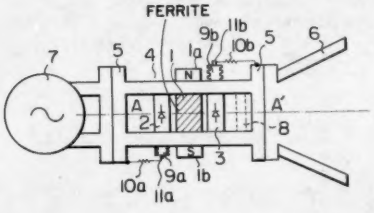
means electrically connecting corresponding segments of the respective characters together;
means applying the backplane voltages to the character backplanes;
means selectively applying the segment voltages to the segments whereby coincidence of application of backplane voltage of one polarity to a given backplane and segment voltage of opposite polarity to a segment of said given backplane causes energization of the liquid crystal therebetween;
means for cyclically reversing the polarities of the voltages applied to the backplanes and segments;
said means selectively applying comprising storage register means for temporarily storing data for display;
level shifter means connected to the storage register means; and
segment driver means connected between the level shifter means and the segments;
said means applying the backplane voltages comprising means for shifting the voltage level of the backplane voltages;
said means selectively applying further comprising means for shifting the voltage level of the segment voltages;
said means selectively applying still further comprising a pair of 8 bit latches each having a capacity of one byte; and
each character comprising two bytes whereby **16** bits may respectively control 16 segments per character to form the characters; and,
said means for cyclically reversing comprising backplane select means for sequentially supplying backplane voltages for the backplanes, and cycle complete control means responsive to the backplane select means to produce a cycle complete signal after all backplanes have received backplane voltage for automatically re-initializing the backplane select means.

4,271,411

DETECTOR FOR DOPPLER DEVICE

Iwata Takashi, Chiba, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 29, 1979, Ser. No. 42,751
Claims priority, application Japan, May 31, 1978, 53/65169
Int. Cl.³ G01S *13/58*
U.S. Cl. 343—5 DD **7 Claims**



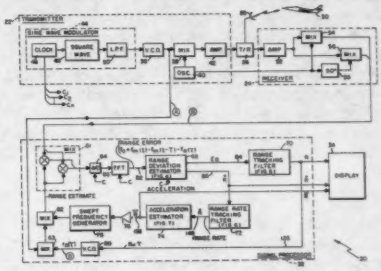
1. A doppler detector comprising;
(a) a rectangular waveguide having a pair of H plane walls and a pair of E plane walls and a pair of flanges at both the extreme ends of said walls, one of said flanges being connected to a microwave oscillator, and the other flange being connected to an antenna,
(b) an elongated ferri-magnetic body inserted between a pair of H planes of said waveguide, said ferri-magnetic body being positioned perpendicular to the path of the doppler signal, and said body being magnetized in the axial direction of the same by a permanent magnet,
(c) a pair of diodes each inserted between H planes of said waveguide on the linear line along the path of the doppler signal, the first diode being positioned to be symmetrical with the second diode concerning the lateral plane including the center axis of said ferri-magnetic body, and the outputs of the doppler detector being provided from the outputs of said diodes.

4,271,412

RANGE TRACKER UTILIZING SPECTRAL ANALYSIS

Jeremy M. Glass, Sudbury; George G. Lampke, Acton, and Roger L. St. Germain, Marlboro, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 15, 1979, Ser. No. 84,491
Int. Cl.³ G01S *13/32*
U.S. Cl. 343—5 FT **10 Claims**



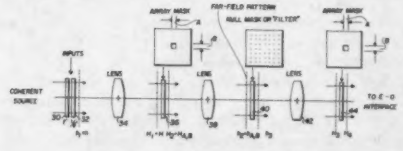
1. An echo measurement system comprising:
means for transmitting a signal to a target, said transmitting means providing a replica of said signal, said signal including a modulation of a frequency thereof with a periodic modulation pattern;
means for receiving said signal as reflected from said target, said receiving means including means for modifying said replica to compensate for the effects of target movement on the frequency spectrum of said signal; and
wherein said modifying means includes means for multiplying said replica by said signal, analyzer means for providing a set of spectral lines of a product of said multiplying means, and means responsive to the differences among spectral lines of said product for modifying said replica with a compensating signal to null the effects of said target movement, said compensating signal having range data therein.

4,271,413

NULL MASK

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 12, 1979, Ser. No. 47,676
Int. Cl.³ H02Q *3/34*
U.S. Cl. 343—100 SA **3 Claims**



1. A coherent optical processor antenna controller which is capable of inserting nulls in an antenna pattern emitted by an array antenna without significantly degrading the remainder of said pattern, comprising,
optical storage means for storing a pattern which varies in transmittance in accordance with the directivity of the antenna pattern,
means for directing coherent light through said storage

means thus forming a resultant beam containing information corresponding to said antenna pattern,

means for band-limiting said information in said beam, thus providing a band-limited beam,

means for optically forming the antenna pattern at a plane,

null mask means at said plane for taking spatially displaced samples of said band-limited beam, said mask means comprising a substrate having a matrix of regularly spaced sampling apertures wherein at least one of said regularly spaced apertures is blocked off or non-existent, said blocked off or non-existent aperture being located at the position in said pattern where said null is desired,

lens means for taking the Fourier transform of the set of samples taken by said apertures,

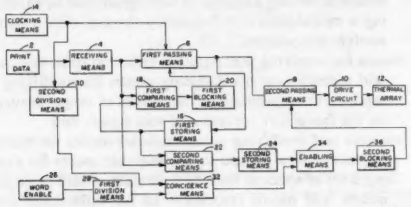
means responsive to the optical output of said lens means for providing respective electrical signals corresponding to the amplitude and/or phase of spatially spaced optical information in said optical output and,

means for exciting the elements of said array antenna with said electrical signals.

4,271,414
THERMAL ARRAY PROTECTION APPARATUS

Glenn L. Williams, Bay Village, and Edward J. Reilly, Mayfield Heights, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 4, 1979, Ser. No. 72,544
Int. Cl.[3] G01D *15/10*
U.S. Cl. 346—76 PH **19 Claims**



1. A thermal array protection apparatus for use in thermal imaging apparatuses of the type in which a linear array of heat-generating resistive elements is used to place marks on thermal sensitive recording media during imaging operations, said apparatus comprising:

receiving means to receive an incoming digital line of data comprising a plurality of individual datum positions;

first passing means operatively connnected to said receiving means to pass the digital line of data received;

clocking means operatively connected to said first passing means to position and synchronize the individual data within said digital line of data received to the individual stylus to be driven;

first storing means operatively connected to said first passing means and said clocking means to store the data passed through said first passing means;

first comparing means operatively connected to said receiving means and said first storing means to compare the datum positions of the stored data in said first storing means to the datum positions of the next line of data received by said receiving means and determine when data exists in corresponding positions;

first blocking means operatively connected to said first comparing means to block the passing by said first passing means of the individual data from said next line of data received for those positions which said first comparing means determined the existence of said corresponding data;

second passing means operatively connected to said first passing means to pass the digital line of data passed by said first passing means to a driving means for current driving the thermal array stylii;

second comparing means operatively connected to said first storing means and said receiving means to compare the datum position in said first storing means to the datum positions of another line of data received by said receiving means and determine when data exist in corresponding positions;

second storing means operatively connected to said second comparing means and said clocking means to store data for those positions which said second comparing means determined the existence of corresponding data;

word enable means to generate digital HIGH signal of a duration corresponding to the length of a digital line of data received;

first division means operatively connected to said word enable means to divide the word enable means frequency by four;

second division means operatively connected to said clocking means to divide the clock frequency by two;

coincidence means operatively connected to both first and second division means to produce an EXCLUSIVE-OR signal of the two divided frequencies;

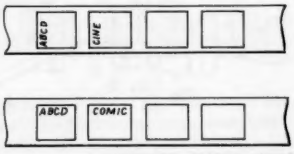
enabling means operatively connected to said second storing means and said coincidence means to provide an enabling signal when the coincidence signal produces a signal or when the second storing means has data in the position presently being clocked by said clocking means; and

second blocking means operatively connected to said enabling means and said second passing means to block the passing by said second passing means of the individual data from the following lines of data received for those positions which said enabling means produces a signal.

4,271,415
LASER COM DEVICE

Makoto Murakoshi, and Shigenori Oosaka, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 25, 1979, Ser. No. 88,422
Claims priority, application Japan, Nov. 7, 1978, 53-136965
Int. Cl.[3] G01D *9/42*
U.S. Cl. 346—108 **5 Claims**



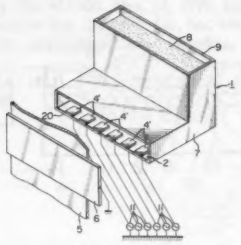
1. A laser COM device comprising a platen secured to a base plate for supporting a strip-shaped recording film means for delivering said recording film to said platen and a laser optical system capable of recording micro-picture images on the recording film supported by said platen by scanning with modulated laser light in a two-dimensional pattern, said platen being supported so that a scan surface of the recording film is scanned by the laser light, and the platen being rotatable with respect to the base plate so that, alternatively, the delivery direction of the record film is parallel to a main scan direction of the laser optical system or the delivery direction and the auxiliary scan direction of the optical system are parallel to each other.

4,271,416

SLIT TYPE INK RECORDING APPARATUS

Toshio Shimizu, Yokosuka; Susumu Ichinose, Yokohama, and Yuji Ooba, Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,337
Claims priority, application Japan, Oct. 18, 1978, 53-127412; Jun. 15, 1979, 54-74700; Jun. 22, 1979, 54-78094
Int. Cl.[3] G01D *15/16*
U.S. Cl. 346—140 R 12 Claims



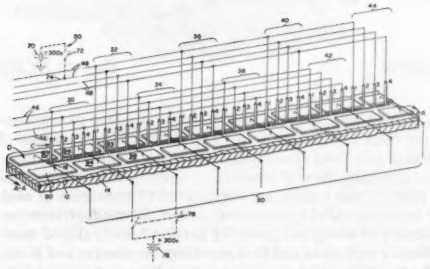
1. A slit type ink recording apparatus comprising a head having a slit-like ink issuing opening in communication with an ink supply tank, a plate disposed adjacent said opening and parallel to the direction of ink travel therefrom, a plurality of divided electrodes formed on the surface of said plate in close proximity to said issuing opening, said divided electrodes being disposed in very closely spaced apart relationship, one or more opposite ink attracting electrodes disposed in the vicinity of a recording medium, and means for applying an ink attracting voltage between one or more of said divided electrodes and said opposite electrode, so that ink in said slit-like ink issuing opening may be issued from the vicinity of said selected divided electrode and caused to move toward said recording medium.

4,271,417

ELECTROGRAPHIC IMAGING WITH NON-SEQUENTIAL ELECTRODE ACTUATION

John Blumenthal, Wickliffe, and Chad Z. Moore, Brecksville, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 24, 1978, Ser. No. 963,405
Int. Cl.[3] G01D *15/06;* G11B *9/08*
U.S. Cl. 346—154 9 Claims



1. An electrographic recording system for recording on a record medium having a charge retentive surface, said system comprising:

a plurality of recording electrodes preferably mounted linearly and in close proximity to said record medium;

circuit means operatively connecting said plurality of recording electrodes into a plurality of separate array groups, each group preferably containing an equal number of recording electrodes;

a plurality of complementary electrode pairs preferably mounted in a linear arrangement having two end pairs and mounted in close proximity to said record medium, said complementary electrode pairs positioned so that said plurality of recording electrodes are located therebetween and wherein each separate array group is centered between two adjacent complementary electrode pairs; each of said complementary electrode pairs being shared by two adjacent, separate array groups except for said end pairs;

means for applying a first voltage pulse of one polarity and magnitude to at least one selected recording electrode in a first selected array group;

means for applying a first contemporaneous voltage pulse of opposite polarity from and of essentially equal magnitude with said first voltage pulse to the two adjacent complementary electrode pairs in which said first selected array group is centered; and

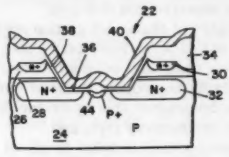
means for controlling all subsequent voltage pulses to the recording electrodes in other selected array groups and to control the corresponding contemporaneous voltage pulses to the complementary electrode pairs such that no recording electrodes in adjacent separate array groups will be pulsed by consecutive voltage pulses, thus preventing a shared, single complementary electrode pair from being pulsed by consecutive contemporaneous voltage pulses.

4,271,418

VMOS MEMORY CELL AND METHOD FOR MAKING SAME

William R. Hiltpold, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 29, 1979, Ser. No. 89,612
Int. Cl.[3] H01L *29/78*
U.S. Cl. 357—23 6 Claims



1. An integrated circuit semiconductor device having a memory core with an array of memory cells, said core compromising

a substrate of crystalline silicon whose upper surface is in a <100> crystal plane;

an epitaxial layer on said substrate;

a series of parallel, elongated regions having the opposite conductivity from said substrate and located at spaced-apart intervals in said epitaxial layer to form bit lines;

a series of buried source regions located at aligned spaced-apart locations in said substrate, spaced-below and having the same conductivity type as said elongated regions;

a series of V-shaped recesses formed at spaced-apart locations between pairs of parallel bit lines, each end of each recess being contiguous with one side of a bit line, which also forms a drain region, and each end of each said recess extending downwardly into said buried source region located below said contiguous bit line;

a thin gate dielectric layer covering the inner walls at both ends of each said recess;

means forming a channel stopping region having the same conductivity of higher doping from said substrate and located between the ends of each said recess;

gate means located on said thin dielectric layer;

an insulating layer covering said epitaxial layer and said bit lines; and

a plurality of conductive word line means extending generally perpendicular to said bit lines, each interconnecting said gate means of a series of aligned recesses.

4,271,419

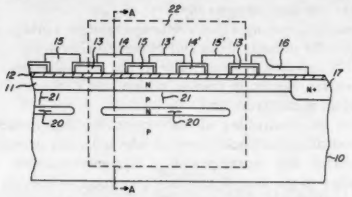
SERIAL READOUT STRATIFIED CHANNEL CCD

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 16, 1978, Ser. No. 869,399

Int. Cl.[3] H01L *29/78, 27/14, 31/00;* **G11C** *19/28*

U.S. Cl. 357—24 **8 Claims**



1. A charge coupled device comprised of:

(a) a semiconductor substrate having dopant atoms of a first conductivity type and a first surface;

(b) a charge transfer channel lying in said substrate near said first surface and having dopant atoms of a second conductivity type opposite to said first type;

(c) an insulating layer lying over said charge transfer channel;

(d) a plurality of phase electrodes serially disposed on said insulating layer transversely to said charge transfer channel;

(e) a barrier region in said substrate lying under and adjacent to said charge transfer channel, said barrier region having dopant atoms of said first type;

(f) a plurality of charge integration regions in said substrate lying spaced apart from each other by portions of said substrate under and adjacent to said barrier region, said portions having dopant atoms of said first type and said charge integration regions having dopant atoms of said second conductivity type; and

(g) clocking means coupled to all of said electrodes for applying first voltages to selected ones of said electrodes to enable charge transfer from said charge integration regions to the portions of said charge transfer channel underlying said selected electrodes, and for applying second voltages to all of said electrodes for propagating charge along said charge transfer channel.

4,271,420

SOLID-STATE IMAGE PICKUP DEVICE

Takao Chikamura, Osaka; Kazufumi Ogawa, Neyagawa; Yasuaki Terui, Neyagawa; Shinji Fujiwara, Neyagawa, and Masakazu Fukai, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 6, 1980, Ser. No. 119,187

Claims priority, application Japan, Feb. 13, 1979, 54-15746

Int. Cl.[3] H01L *27/14, 29/78*

U.S. Cl. 357—30 **2 Claims**

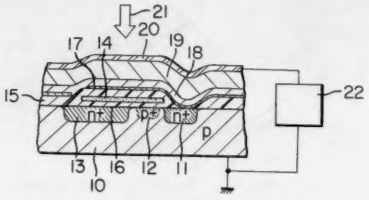
1. A solid-state image pickup device characterized by the provision of

(a) a semiconductor substrate having a first region of one conductive type and more than one second region of the other conductive type formed within the bulk of said semiconductor substrate,

(b) a charge transfer type unit cell or an element capable of X-Y addressing formed within the bulk of said semiconductor substrate exterior of said second region of the other conductivity type,

(c) a gate electrode for reading the signal charge stored in said second region of the other conductivity into said charge transfer type unit cell or said element capable of X-Y addressing,

(d) an insulating layer formed over said semiconductor substrate and said gate electrode except a predetermined portion of said second region of the other conductivity type,



(e) a first electrode selectively formed on said insulating layer and electrically connected to said second region of the other conductivity,

(f) a photoconductive layer overlaying said first electrode and said insulating layer,

(g) a second electrode formed over said photoconductive or photosensitive layer, and

(h) a voltage application means for applying to said second electrode a voltage in proportion to the amount of incident light.

4,271,421

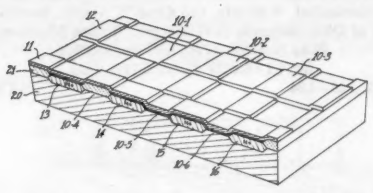
HIGH DENSITY N-CHANNEL SILICON GATE READ ONLY MEMORY

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 762,612, Jan. 26, 1977, Pat. No. 4,151,020. This application Feb. 12, 1979, Ser. No. 11,735

Int. Cl.[3] H01L *27/04, 29/78;* **G11C** *11/40*

U.S. Cl. 357—41 **10 Claims**



1. A read only memory array formed in a face of semiconductor body comprising a plurality of rows and columns of insulated gate field effect transistor areas, a plurality of elongated generally parallel conductive strips at said face providing gates of said transistors, the gates of all transistors in each row being provided by a separate one of the conductive strips, a plurality of elongated generally parallel heavily-doped semiconductor regions in said face providing the sources and drains of the transistors and providing output lines and ground lines for the array, all of the sources or drains of all transistors in each column being provided by a separate one of said semiconductor regions, thick field oxide being provided between said semiconductor regions and extending into said face substantially below the upper surface of said semiconductor regions, selected areas of thin gate oxide underlying the conductive strips between said semiconductor regions where thick oxide has been removed at a plurality of positions of the array where

transistors exist, the remaining positions of the array having thick oxide underlying the conductive strips where transistors do not exist.

4,271,422

CMOS SOS WITH NARROW RING SHAPED P SILICON GATE COMMON TO BOTH DEVICES

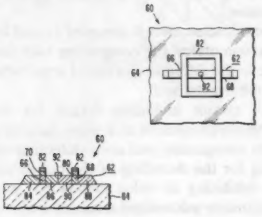
Alfred C. Ipri, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 852,931, Nov. 18, 1977, abandoned. This application Sep. 21, 1978, Ser. No. 944,340

Claims priority, application United Kingdom, Feb. 28, 1977, 8264/77

Int. Cl.³ H01L *27/12, 29/78, 21/22, 21/28*

U.S. Cl. 357—42 **2 Claims**



1. A semiconductor device comprising:

a substrate of an insulating material;

an island of semiconductor material on the substrate, the island being in the shape of an elongated rectangle having two connected portions, each portion having drain, source and channel regions, the drain and source regions of one of the portions being of one conductivity type and the drain and source regions the other of the portions being of an opposite conductivity type;

a strip of oxide on and extending across each of the channel regions of the semiconductor island; and

a narrow strip of P-type polycrystalline silicon extending across the substrate and on each oxide strip, the polycrystalline silicon strip being in an enclosed form and insulated from the island by each strip of oxide.

4,271,423

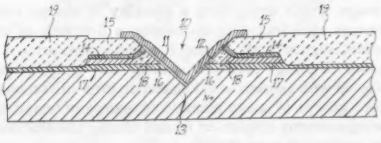
V-GROOVE SEMICONDUCTOR DEVICE WITH BURIED CHANNEL STOP

S. Daniel Kang, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1979, Ser. No. 1,096

Int. Cl.³ H01L *29/06*

U.S. Cl. 357—55 **10 Claims**



1. A semiconductor device comprising a V-shaped groove in a face of a semiconductor body, a thin insulating coating on said face in said groove, a conductive layer over said coating, a thick insulating coating on the face spaced from the groove, and a buried impurity-doped region in said face extending along the face parallel thereto but spaced therefrom, said thick insulating coating extending into said face to said buried region so the buried region is underlying said thick insulating coating, the v-shaped groove extending into said face deeper than said buried region so the buried region forms parts of walls of the groove.

4,271,424

ELECTRICAL CONTACT CONNECTED WITH A SEMICONDUCTOR REGION WHICH IS SHORT CIRCUITED WITH THE SUBSTRATE THROUGH SAID REGION

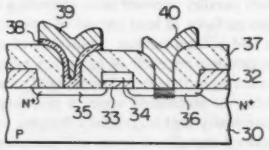
Katsuyuki Inayoshi, Hiyoshi, and Kazutoshi Miyao, Edamachi, both of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Continuation of Ser. No. 913,860, Jun. 8, 1978, abandoned. This application May 5, 1980, Ser. No. 146,220

Claims priority, application Japan, Jun. 9, 1977, 52/68135

Int. Cl.³ H01L *23/48, 29/46, 29/62*

U.S. Cl. 357—67 **25 Claims**



1. A semiconductor device which comprises:

a semiconductor substrate of a first conductivity type;

first and second regions of a second conductivity type opposite to said first conductivity type extending into said substrate from a surface of said substrate;

an insulating film selectively covering said surface of the substrate including said first and second regions, said insulating film having first and second electrode windows to selectively expose said first and second regions, respectively;

a first electrode, comprising a metal layer which forms an alloy with said semiconductor substrate, formed to contact said first region through said first electrode window, and to form a short circuit with said substrate through said first region as a result of formation of said alloy;

a second electrode, comprising an upper metal layer and a lower metal layer for preventing an alloy formation between said upper metal layer and said substrate, formed to contact said second region through said second electrode window;

whereby said first electrode is ohmically connected to said substrate.

4,271,425

ENCAPSULATED ELECTRONIC DEVICES AND ENCAPSULATING COMPOSITIONS HAVING CROWN ETHERS

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,797

Int. Cl.³ C08G *77/04;* **C08K** *5/06;* **C03C** *17/28;* **C08G** *77/38*

U.S. Cl. 357—72 **7 Claims**

1. An electronic device comprising a circuit element, and an encapsulant therefor wherein said encapsulant is a polymeric material having dissolved therein a crown ether selected from the group consisting of a 12-crown-4 ether, a 15-crown-5 ether and derivatives thereof.

4,271,426

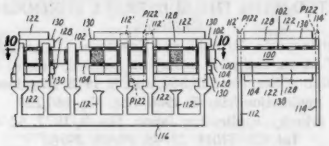
LEADED MOUNTING AND CONNECTOR UNIT FOR AN ELECTRONIC DEVICE

Billy M. Hargis, Hugo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 932,609, Aug. 10, 1978. This application Jul. 2, 1979, Ser. No. 52,601

Int. Cl.[3] H01L 23/02, 23/12, 39/02

U.S. Cl. 357—74 7 Claims



1. A leaded mounting and connector structure including a first mounting and connecting unit having a top and bottom surface and two parallel opposed sides extending between said top and bottom surfaces, at least one set of a plurality of metallized areas at said bottom surface, a plurality of spaced metallized areas positioned on each of said two parallel opposed sides and connecting with selected metallized areas of said one set of a plurality of metallized areas, a plurality of terminal leads, each physically and electrically bonded to a different one of said spaced metallized areas and extending from said first unit in a direction away from said bottom surface; a second mounting and connector unit having a multi-level first surface and an opposed second surface, said second surface having a plurality of metallized areas corresponding to and physically and electrically bonded to said one set of a plurality of metallized areas at said bottom surface of said first unit, said second unit having two parallel opposed sides extending between said first and second surfaces, each of said last-mentioned opposed sides having at least one locating protrusion received between two adjacent terminal leads of said plurality of terminal leads serving to locate said second unit relative to said bottom surface of said first unit prior to physical bonding of said metallized areas at said bottom surface of said first unit to said metallized areas at said second surface of said second unit.

4,271,427

CIRCUIT FOR DECODING CHROMINANCE SIGNALS IN THE SECAM TELEVISION SYSTEM AND A TELEVISION RECEIVER COMPRISING THIS CIRCUIT

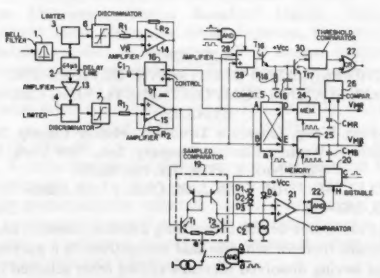
Michel Van Den Driessche, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 5, 1979, Ser. No. 45,765

Claims priority, application France, Jun. 9, 1978, 78 17280

Int. Cl.[3] H04N 9/40

U.S. Cl. 358—40 8 Claims



1. A circuit for decoding the chrominance signals (R-Y) and (B-Y) carried by the composite videofrequency signal of a Secam television system, comprising:

a "bell" input filter for extracting a color sub-carrier signal from said composite videofrequency signal;

direct and delayed chrominance channels adapted to receive said color sub-carrier signal from said "bell" input filter, each of said direct and delayed chrominance channels having an output;

a commutator having a first input coupled to said output of said direct chrominance channel, and a second input coupled to said output of said delayed chrominance channel, and having (R-Y) and (B-Y) outputs;

said direct and delayed chrominance channels together including a regulated differential amplifier stage for providing, at the beginning of each line, stable identification voltages, corresponding to red and blue identification frequency signals, to said first and second inputs of said commutator;

a color identification circuit, coupled to said input terminals of said commutator for controlling said commutator responsive to the difference in signal level between said first and second inputs; and

a "keeper" circuit including means for recognizinig a Secam-type transmission and noise detecting means, said means for recognizing and noise detecting means together providing for the decoding of the colors to be displayed and the inhibiting of color display for non-Secam-type transmissions or parasitized transmissions.

4,271,428

ARRANGEMENT FOR COLOR PICTURE SCANNING

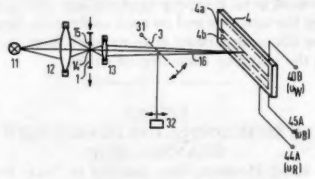
Heiner Herbst, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,000

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838098

Int. Cl.[3] H04N 9/04

U.S. Cl. 358—54 16 Claims



1. Apparatus for scanning a color picture line-wise with a projecting light beam, comprising:

shift means operable to shift the projected color picture perpendicular to the scan direction;

an image sensor comprising a plurality of charge transfer devices each including an output, a first row of image points aligned with a scan line and constituting a first group of image points, a second row of image points aligned with another scan line and divided into second and third groups of image points, said groups of image points being operably connected to said charge transfer devices for feeding charges thereto;

first, second and third types of color filters, each type covering a specific spectrum range, located in front of said first, second and third groups of image points to accumulate corresponding image signals as charges;

first charge transfer means operable to connect and transfer charges between image points and the respective charge transfer devices; and

second charge transfer means connected to said charge transfer devices and operable to sequentiallyu transfer the

charges stored therein to the respective outputs as image signals.

4,271,429

ARRANGEMENT FOR COLOR PICTURE SCANNING

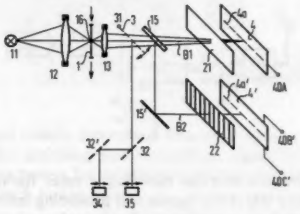
Heiner Herbst, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,001

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838099

Int. Cl.³ H04N *9/04*

U.S. Cl. 358—54 **18 Claims**



1. An arrangement for scanning a color picture with light beams, comprising:

photoelectric receiving means including at least one charge transfer device image sensor having a row of image points receiving light from a line of the color picture, a plurality of charge transfer devices operably connected to said image points;

color filter means located in the light path including a plurality of color filters each located in front of a respective image point, said plurality of color filters being serially arranged with respect to one another in a row and having different spectrum ranges which repeat in a serial pattern so as to project a corresponding pattern of light on the respective image points;

shift means for shifting the color images on said image points;

said image sensor including output means for providing sequential read-out of sensor signals.

4,271,430

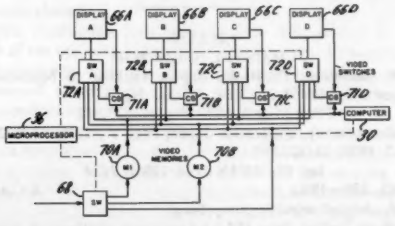
MICROFILM DISPLAY APPARATUS

Gerald E. O'Brien, Atlanta, Ga., assignor to Computer Microfilm International Corporation, Atlanta, Ga.

Filed Apr. 10, 1978, Ser. No. 895,153

Int. Cl.³ H04N *5/22*

U.S. Cl. 358—102 **2 Claims**



1. In a video processing apparatus, means, responsive to a supplied analog video signal for selectively reversing the polarity of said signal, comprising an amplifier having first and second output terminals providing video signals of opposite polarity, a first pair of oppositely facing diodes connected in series between said first amplifier output terminal and a video output terminal, and a second pair of oppositely facing diodes similarly oriented as said first diodes and connected in series between said second amplifier output terminal and said video output terminal, and means, responsive to a supplied polarity control signal, and connected to terminals between the diodes of said first and second diode pairs, for forward biasing the diode of one of said pairs and reverse biasing the diodes of the other of said pairs in response to a first condition of said polarity control signal, and for reversing the biasing of said diodes in response to a second condition of said polarity control signal.

4,271,431

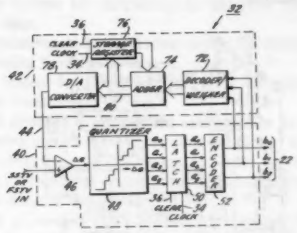
SCAN CONVERTER UTILIZING DISCRETE DIFFERENTIALLY CODED SIGNALS

George R. Steber, Mequon, Wis., assignor to Star Systems, Inc., Farmingdale, N.Y.

Filed Oct. 11, 1978, Ser. No. 950,465

Int. Cl.³ H04N *5/02, 7/12;* **H04L** *25/16*

U.S. Cl. 358—140 **14 Claims**



1. A scan rate converter, comprising:

(A) input section means operable in both a fast scan conversion and a slow scan conversion mode, said input section means for:

(1) sampling an input FSTV signal at a fast scan rate when said input section means is operated in said fast scan conversion mode, said input FSTV signal including a plurality of lines of video information;

(2) sampling an input SSTV signal at a slow scan rate when said input section means is operated in said slow scan conversion mode, said input SSTV signal including a plurality of lines of video information; and

(3) generating a discrete differential coded signal responsive to each said sampling of said input FSTV and input SSTV signals when said input section means is operated in said fast scan and slow scan modes of operation, respectively, such that each line of video information being sampled is divided into a plurality of discrete differential coded signals, each of said discrete differential coded signals having a magnitude determined by the difference between the actual magnitude of the FSTV or SSTV signal being sampled at the sampling instant corresponding to the discrete differential coded signal in question and a predicted magnitude of the FSTV or SSTV signal being sampled at the sampling instant corresponding to the discrete differential coded signal in question, the value of said predicted magnitude of the FSTV or SSTV signal being sampled being reset to a predetermined value at each sampling instant corresponding to the first discrete differential coded signal in a line of video information being sampled,

(B) memory section means operable in a read and a write mode of operation, said memory section means for:

(1) storing each of said discrete differential coded signals generated by said input section means when said memory section means is operated in said write mode; and

(2) reading said discrete differential coded signals stored in said memory section means out of said memory sec-

tion means when said memory section means is operated in said read mode, said discrete differential coded signals stored in said memory section means being read out of said memory section means at both said fast scan and said slow scan sampling rates in a time multiplexed manner; and

(C) output section means for:

(1) converting said discrete differential coded signals read out of said memory section means at said fast scan rate into an output FSTV signal; and

(2) converting said discrete differential coded signals read out of said memory section means at said slow scan rate into an output SSTV signal.

4,271,432

POWER SUPPLY CONTROL APPARATUS FOR A TELEVISION RECEIVER

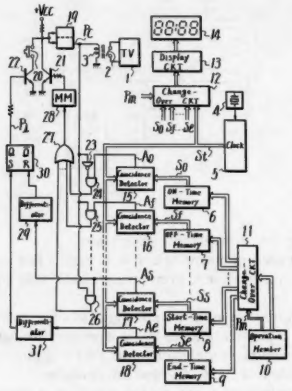
Tadahiko Suzuki; Tomoaki Miyasaka, and Toshio Amano, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,338

Claims priority, application Japan, Jan. 12, 1979, 54-2785

Int. Cl.[3] H04N *5/44*

U.S. Cl. 358—190 **6 Claims**



1. Power supply control apparatus for a television receiver having a power supply with ON and OFF states, comprising:

manually-actuable power switch means for switching the power supply of the television receiver between said ON and OFF states;

timing means for generating a time code representing the current time;

key input means for generating a start-time code representing a programmable start time and for generating an end-time code representing a programmable end time;

memory means for storing said start-time code and end-time code;

first coincidence detector means for detecting coincidence between the generated time code and said start-time code stored in said memory means and providing a first coincidence output when such coincidence is detected;

second coincidence detector means for detecting coincidence between said generated time code and said end-time code stored in said memory means and providing a second coincidence output when such a coincidence is detected; and

conditioning means for conditioning said power switch means into an enabled condition in which said power switch means is manually actuable for said switching of said power supply and into a disabled condition in which said power switch means is prevented from said switching of said power supply, including means responsive to said first coincidence output for conditioning said power switch means into one of said enabled and disabled conditions and responsive to said second coincidence output for conditioning said power switch means into the other of said enabled and disabled conditions.

4,271,433

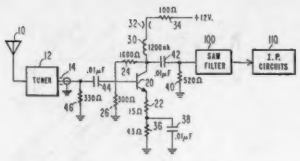
SAW FILTER PREAMPLIFIER

Gerald E. Theriault, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 97,041

Int. Cl.[3] H04N *5/44*

U.S. Cl. 358—191.1 **19 Claims**



1. In a television receiver including a tuner for receiving radio frequency television signals and producing intermediate frequency signals at an output at a first impedance level, and a surface acoustic wave filter, having an input, and exhibiting a characteristic response defining an intermediate frequency passband including desired ones of said intermediate frequency signals and having a given input impedance; a preamplifier coupled between the output of said tuner and the input of said surface acoustic wave filter comprising:

a transistor having base, emitter, and collector electrodes;

a degeneration resistor coupled between said emitter electrode and a point of reference potential;

an inductor coupled between a source of supply potential and said collector electrode;

a load resistor coupled between the collector electrode of said transistor and a point of signal reference potential;

a feedback resistor coupled between said collector and base electrodes;

a fourth resistor coupled between said base electrode and a point of reference potential;

means for coupling said base electrode to the output of said tuner for receiving said intermediate frequency signals; and

means for coupling said collector electrode to the input of said surface acoustic wave filter,

wherein said resistors bias said transistor so as to amplify said intermediate frequency signals in a substantially distortionless manner and said preamplifier exhibits an input impedance which substantially matches said first impedance and an output impedance which is substantially less than said given input impedance of said surface acoustic wave filter.

4,271,434

CHANNEL SELECTOR

Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 9, 1979, Ser. No. 37,332

Claims priority, application Japan, May 17, 1978, 53/59220; Nov. 7, 1978, 53/137574

Int. Cl.[3] H04N *5/44*; H04B *1/34*

U.S. Cl. 358—193.1 **8 Claims**

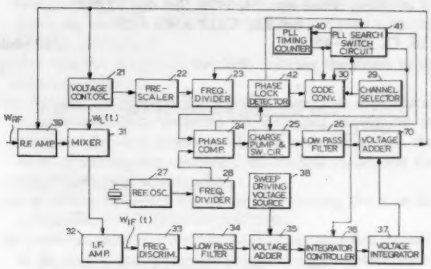
1. A channel selector comprising:

a phase locked loop (PLL) frequency synthesizer which synthesizes a local oscillation frequency corresponding to a closely determined frequency to a transmitting signal of a desired receiving channel;

a search tuning system;

means for adding an output of a voltage integrator of said

search tuning system which is in sweeping state to an output of a low pass filter of said PLL; means for causing said PLL to be an open loop, when an added voltage obtained by said means reaches a voltage corresponding

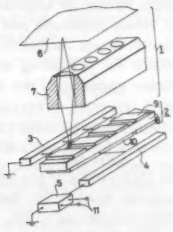


to said closely determined frequency; and means thereafter for searching said transmitting signal by said search tuning system for causing said search tuning system to be in search tuning state.

4,271,435
SCANNING TYPE READOUT DEVICE

Mutsuo Takenouchi; Shunsuke Tomiyama, and Takashi Ozawa, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,757
Claims priority, application Japan, Dec. 8, 1977, 52-146588
Int. Cl.³ H04M *3/14*
U.S. Cl. 358—213 **10 Claims**

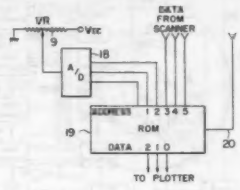


1. A scanning type readout device comprising, a photoelectric conducting layer, electrode segments arranged one-dimensionally on a first surface of the photoelectric conducting layer, said electrode segments being electrically insulated from each other and each having a size equal to one image element; opposite electrodes arranged on a second surface of the photoelectric conducting layer opposite said first surface so that each of the opposite electrodes is in opposition to a number of said electrode segments; first semiconductor switch means connected respectively to the opposite electrodes; second semiconductor switch means connected respectively to said electrode segments, a common load resistor and a power source connected between said first and second semiconductor switch means, and scan-controlling means for opening and closing said first and second semiconductor switch means in a predetermined sequence thereby to apply a voltage sequentially between said electrode segments and said opposite electrodes wherein the electrode segments are scanned one-dimensionally; at least either said electrode segments or said opposite electrodes being transparent; and a light image is projected on the photoelectric conducting layer from the side of said transparent electrodes.

4,271,436
DIGITAL COPYING MACHINE

Morio Kurose, Yokohama; Koichi Ejiri, Chiba, and Mamoru Maeda, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1979, Ser. No. 33,268
Claims priority, application Japan, May 2, 1978, 53-52343
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—296 **6 Claims**



1. A digital copying machine which comprises:
a scanner system for outputting an image in the form of digital data;
a data processing and transferring system for processing and transferring said digital data;
a plotter system for outputting data from said data processing and transferring system;
a control system for controlling said scanner system, data processing and transferring system and plotter system; and
density correcting control means provided on the control panel of said digital copying machine, said control means being manually adjustable,
said data processing and transferring system comprising analog-to-digital converter means for converting the output of said control means into a digital value, and a read-only memory employing as address data a value obtained by combining said digital value provided by said analog-to-digital converter means and a digitalized density value for said scanner system, said digital value provided by said analog-to-digital converter means being a low address for said read-only memory, said digitized density value from said scanner system being a high address for said read-only memory, wherein a density signal added by a degree of correction is applied to said plotter system by storing density values corrected in correspondence to said address data in said read-only memory.

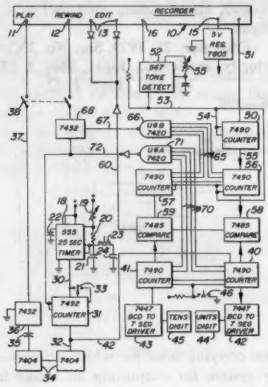
4,271,437
TIME LAPSE VIDEOTAPE EDITOR/CONTROLLER

Xenophon Scott, 2 Whitby Rd., Cherry Hill, N.J. 08003

Filed Jun. 6, 1979, Ser. No. 45,969
Int. Cl.³ H04N *5/78*; G11B *27/02*
U.S. Cl. 360—9 **8 Claims**

1. A time lapse videotape editor/controller for a recorder having play, rewind, and edit controls; comprising timer means for connection to the play control to energize the latter at a desired frequency of sampling cycles; first counter means for counting the number of beginnings of sampling cycles effected by energizing of said play control; second counter means for repeatedly indicating a desired length of sample to be recorded; said desired sample length being shorter than the period of said frequency; third counter means for counting the number of said desired sample lengths subsequent to each cycle beginning; comparitor means for comparing said first and third counter means and adapted to connection to the edit control of the recorder to operate the latter when the count of said third counter means equals a predetermined relation to that of said first counter means; and rewind control operating means for connection between said third counter and rewind control effecting rewind to the beginning of the tape responsive to a predetermined count of sample lengths subsequent to each

cycle beginning, whereby a tape is rewound to await energizing of said play control responsive to said first timer means and



initiate editing for the sample length when the tape passes previously edited samples plus one sample.

4,271,438

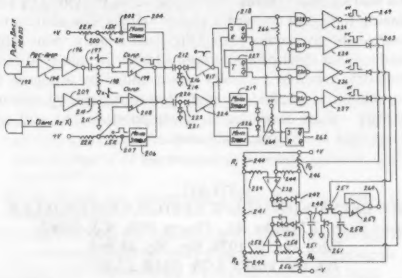
RECOVERY AND DEMODULATION OF A PULSE WIDTH MODULATION ENCODED SIGNAL RECORDED ON MAGNETIC TAPE

William D. Cornell, 907 Camargo Dr., Ballwin, Mo. 63011

Division of Ser. No. 837,377, Sep. 28, 1977. This application Jul. 5, 1979, Ser. No. 54,705

Int. Cl.³ G11B *5/00, 5/02*

U.S. Cl. 360—32 **6 Claims**



1. A method for reconstructing an original pulse width modulation that was differentiated and recorded on magnetic tape from the play-back signal which consists of alternately initially positive-going and initially negative-going bipolar pulses comprising the steps of generating a second signal which is an inverse of said play-back signal by an inverter responsive to said play-back signal, first and second identical initially positive-going bipolar pulse descriminator and zero-crossing detectors, coupling said first descriminator and zero-crossing detector to be responsive to said play-back signal and coupling said second descriminator and zero-crossing detector to be responsive to said second signal, coupling the set input of a memory circuit to be responsive to said first descriminator and zero-crossing detector and coupling its reset input to be responsive to said second descriminator and zero-crossing detector, said memory circuit having an output producing the reconstruction of said original pulse width modulation.

4,271,439

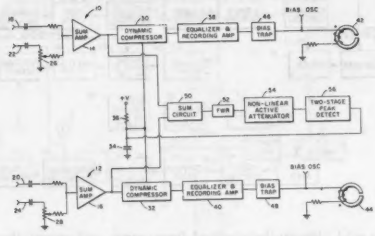
ELECTRONIC GAIN AND NOISE CONTROL FOR RECORDING OF ANALOG INFORMATION

William R. Wray, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,942

Int. Cl.³ G11B *5/45, 5/02*

U.S. Cl. 360—65 **10 Claims**



1. In apparatus for analog recording on a storage medium and having dynamic compressor means for amplifying an analog input signal to be recorded with a gain that varies in response to an applied control signal, an improvement for limiting the gain for analog input signals which exceed a first select amplitude without exceeding a second select amplitude greater than the first select amplitude comprises:

limiter means for introducing a gain-reducing influence to the applied control signal in accordance with a measure of the analog input signal amplitude in excess of the first select amplitude, and for controlling said gain-reducing influence to provide a compressor gain that is substantially a single-valued function of the analog input signal for analog input signals having an amplitude within a range between the first select amplitude and the second select amplitude, said limiter means further comprising a nonlinear active attenuator for providing said measure in response to a nonlinear variation of the analog input signal amplitude.

4,271,440

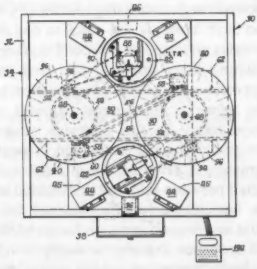
AUTOMATIC TAPE CARTRIDGE HANDLING SYSTEM

John P. Jenkins, Towanda; Rodney M. Sabick, Normal, and William W. Kidd, Bloomington, all of Ill., assignors to International Tapetronics Corporation, Bloomington, Ill.

Filed Apr. 6, 1979, Ser. No. 27,800

Int. Cl.³ G11B *15/68, 23/04*

U.S. Cl. 360—92 **39 Claims**



1. A tape cartridge handling system comprising:

a frame;

at least one cartridge storage drum, at least one stack of cartridge transducing machines, a loading chute, an un-

loading chute, and a cartridge transfer mechanism mounted on the frame;

the cartridge drum having a cylindrical configuration with cartridge storage compartments arranged in columns about its circumference and in rows along its axis and being rotatably movable to discrete operative positions to move the respective columns to positions aligned with the transfer mechanism;

power rotating means for rotatably moving the drum to its operative positions;

the transfer mechanism including a cage and a platform supported thereon mounted for swinging movement to discrete operative positions aligned with the drum, the stack of transducing machines, the loading chute, and the unloading chute respectively;

power swinging means for swingably moving the transfer mechanism to its operative positions;

the platform and the drum being relatively movable parallel to the axis of the drum to discrete operative positions in which the platform is aligned with the respective rows of storage compartments on the drum;

power traversing means for relatively moving the platform and drum parallel to the axis of the drum to the operative positions in which the platform is aligned with the respective rows on the drum;

a cartridge holding member supported on the platform for movement between a retracted position on the platform and an extended position transversely thereof;

power moving means for moving the holding member between its retracted and extended positions;

power activated cartridge gripping means supported on the holding member and selectively activatable and deactivatable to grip and release a cartridge; and

control means for monitoring movements of the various movable members and activating the various power means in a predetermined sequence to move a cartridge automatically from the loading chute to the unloading chute via the drum, transfer mechanism, and stack of transducing machines.

4,271,441

INTEGRAL SHIELD AND BIAS ELEMENT FOR MAGNETIC TAPE CASSETTES

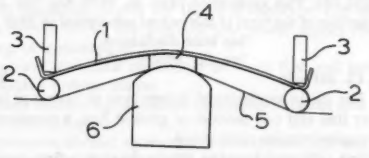
Joachim Greiner, Ebenhausen, and Albrecht Mager, Rodenbach, both of Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,995

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835459

Int. Cl.³ G11B *15/60*

U.S. Cl. 360—130.33 **11 Claims**



1. In a magnetic tape cassette of the type having upper and lower cassette housing parts with side walls, the front wall provided with an entry aperture for a magnetic head associated with a recording/playback apparatus and, facing this aperture, a magnetic screening shield and a tape biasing means comprising:

a single magnetic element of uniformly resilient, "soft" magnetic alloy with an elastic limit of at least 500 N/mm^2,

whereby the uniform alloy element is both a magnetic shield and a tape biasing means.

4,271,442

PLANE MAGNETIC RECORDING MEDIUM

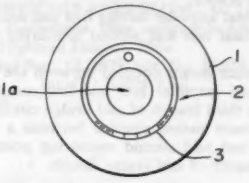
Yoshio Mikame, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,074

Claims priority, application Japan, Apr. 10, 1978, 53-41856

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—131 **2 Claims**



1. A magnetic recording system comprising:

a plane magnetic recording medium having a plurality of parallel tracks of a predetermined width, said tracks being spaced from one another by predetermined spacings;

a magnetic head having a predetermined width, said width of said head being greater than said width of one of said tracks and less than the sum of the widths of one of said tracks and one of said spacings;

means for positioning said head adjacent one of said tracks; and

means for moving one of said medium and said head relative to the other to form a tracing, said tracing having a path substantially identical to the length of said tracks and a width equal to said width of said head, the maximum variations between the length of said one of said tracks and the path of said tracing being less than the excess in the width of said head over the width of said one of said tracks, whereby said length of said one of said tracks is always entirely within said width of said tracing.

4,271,443

QUENCH DETECTOR

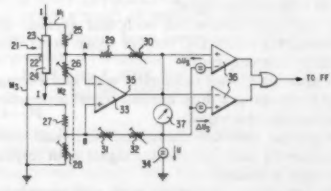
Gernot Nöther, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 7, 1979, Ser. No. 73,487

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839787

Int. Cl.³ H02H *3/28*

U.S. Cl. 361—19 **8 Claims**



1. A quench detector for monitoring a superconducting coil for changes in its conductivity and for monitoring the leads connected to said coil, said superconducting coil being divided into first and second coil elements by a tap located between said coil elements, comprising

first and second resistance means, each having means coupling one end to a first measuring point, the other ends of each of said first and second resistance means being connected to corresponding opposite ends of said superconducting coil, the first and second coil elements of said

superconducting coil and said first and second resistance means forming the first branch of a bridge circuit;

third and fourth resistance means, each having means coupling one end to a second measuring point, the other ends of each of said third and fourth resistance means being connected to the tap on said superconducting coil, said third and fourth resistance means forming the second branch of said bridge circuit having a resistance corresponding to the resistive component of the impedance of said first branch;

an operational amplifier having first and second inputs coupled to said first and second measuring points, respectively;

fifth resistance means coupled between the output of said operational amplifier and said first measuring point to form the third branch of said bridge circuit; and

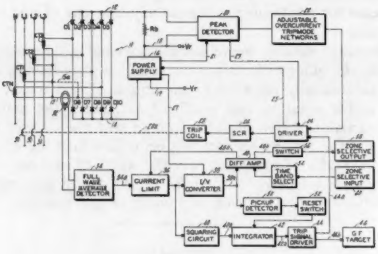
sixth resistance means coupled between a source of test voltage and said second measuring point to form the fourth branch of said bridge circuit.

4,271,444

GROUND FAULT TRIP MODE NETWORK FOR STATIC TRIP CIRCUIT BREAKERS

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jul. 31, 1979, Ser. No. 62,387
Int. Cl.[3] H02H *3/16*
U.S. Cl. 361—48 **18 Claims**



1. A ground fault trip mode network operative to trip a circuit interrupting device in the event of a ground fault on an AC power distribution circuit, said network comprising, in combination:

A. means for deriving a first AC ground fault current signal proportional to ground fault current flowing from the power distribution circuit;

B. a rectifying average detector connected with said deriving means for developing a second DC current signal of a magnitude proportional to average amplitude of the rectified first current signal;

C. a converter connected with said average detector for developing a first DC voltage signal proportional to said second current signal;

D. a squaring circuit connected with said average detector for developing a third current signal proportional to said second current signal;

E. a pickup detector connected with said converter for monitoring said first voltage signal with respect to a first voltage reference;

F. an integrator connected with said squaring circuit to integrate said third current and thus develop a second voltage signal whose magnitude varies with time, said integrator being enabled by said pickup detector to integrate said third current signal while said first voltage signal exceeds said first voltage reference in one sense and disabled by said pickup detector while said first voltage signal exceeds said first reference voltage in the opposite sense; and

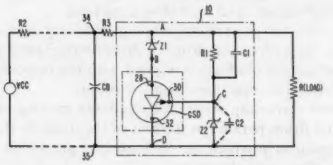
G. a trip signal driver connected with said integrator to generate a trip signal initiating tripping of the interrupting device when said second voltage signal achieves a predetermined magnitude.

4,271,445

SOLID-STATE PROTECTOR CIRCUITRY USING GATED DIODE SWITCH

Adrian R. Hartman, New Providence; Robert S. Scott, Mountainside, and Peter W. Shackle, Bridgewater, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1978, Ser. No. 972,055
Int. Cl.[3] H02H *3/22*
U.S. Cl. 361—56 **4 Claims**



1. Circuitry to be connected to first and second terminals (A,B) across a load (R(Load)) to be protected including a pair of diodes (Z1,Z2) each having the characteristic that it passes little current therethrough below a threshold applied voltage and experiences a relatively constant voltage drop thereacross for increasing current therethrough and a gated diode switch (GDS) having an anode (28), a cathode (32), and a gate (30) terminal, and a resistor (R1) CHARACTERIZED IN THAT:

the first diode (Z1) is connected between the first circuit terminals (A) and the anode of the gated diode switch (GDS);

the second diode (Z2) is connected between the gate (30) of the switch (GDS) and the second terminal;

the cathode of the switch (GDS) is connected to the second circuit terminal (B); and

the resistor (R1) is connected between the first circuit terminal (A) and the gate (30) of the switch (GDS).

4,271,446

TRANSIENT VOLTAGE SUPPRESSION SYSTEM

Wilford K. Comstock, 8152 S. Danish Rd., Sandy, Utah 84070

Continuation-in-part of Ser. No. 810,078, Jun. 27, 1977, Pat. No. 4,152,743. This application Mar. 26, 1979, Ser. No. 23,655
The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.
Int. Cl.[3] H02H *9/04*
U.S. Cl. 361—56 **9 Claims**

1. For use in an electrical power system having at least one power line and one neutral or ground line, a transient signal suppression system comprising

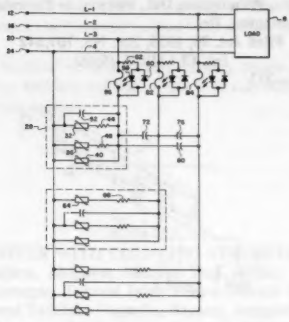
a first voltage clamping device having a first breakdown voltage rating,

a switching resistance means thermally coupled to said first voltage clamping device and operable to become substantially nonconductive at a certain threshold temperature,

means for coupling the first voltage clamping device and switching resistance means in series to the neutral line,

a second voltage clamping device coupled in parallel with the series connections of the first voltage clamping device and switching resistance means, said second voltage clamping device having a second breakdown voltage rating which is higher than said first rating,

fuse means coupled to said power line and in series with said second voltage clamping device, and



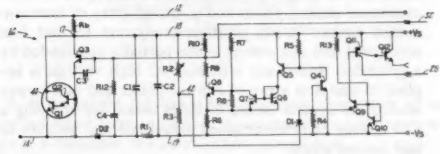
light-emitting means and resistance means coupled in series with each other and in parallel with said fuse means.

4,271,447

POWER SUPPLY FOR CIRCUIT BREAKER STATIC TRIP UNIT

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jul. 31, 1979, Ser. No. 62,388
Int. Cl.³ H02H *3/08*
U.S. Cl. 361—93 **8 Claims**



1. In a circuit breaker electronic trip unit connected to receive rectified current inputs from individual phase current sensing transformers and including a burden resistor across which is developed a signal voltage proportional to the magnitude of the input current magnitude, a peak detector responsive to the signal voltage, at least one trip mode network processing the signal output of the peak detector pursuant to issuing a trip signal, and a driver circuit responsive to the trip signal for initiating energization of a trip coil operating no effect opening of breaker contacts, a power supply circuit for providing operating power for the peak detector, trip mode network, driver circuit and trip coil, said power supply circuit including, in combination:

A. a power transistor connected between first and second regulated voltage buses;

B. at least one storage capacitor connected between said first and second buses;

C. a potential divider connected between said first and second buses for developing at a terminal thereof a monitoring voltage proportional to the regulated voltage across said buses;

D. voltage threshold means responsive to said monitoring voltage;

E. a regenerative trigger circuit operating under the control of said threshold means to maintain the voltage across said buses in regulation by switching said power transistor off when the regulated voltage falls below its regulated level to direct the input current flowing through the burden resistor into said storage capacitor to increase the charge thereon and by switching said power transistor on when the regulated voltage rises above its regulated level to shunt input current flowing through the burden resistor from said storage capacitor; and

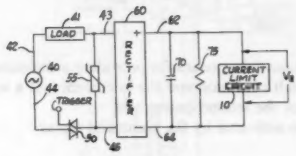
F. a diode serially connected in one of said first and second buses to prevent said storage capacitor from discharging through said power transistor while it is on.

4,271,448

ELECTRONIC PROTECTION CIRCUIT FOR SOLID STATE SWITCHES ENERGIZING AC LOADS

Robert J. Pond, Doylestown, Ohio, assignor to Acme Cleveland Corporation, Highland Heights, Ohio

Filed Nov. 13, 1979, Ser. No. 93,218
Int. Cl.³ H02H *9/02*
U.S. Cl. 361—93 **9 Claims**



1. In a circuit having in electrical series relationship an AC source, an AC load, and a load-energizing semiconductor switch, a short circuit protector comprising:

an overcurrent sensing circuit responsive to unidirectional current flowing through it, the sensing circuit being connected in electrical series relationship with the source, the load, and the semiconductor switch, the sensing circuit switching from a low impedance state to a high impedance state when the unidirectional current through it exceeds a predetermined current amplitude, the sensing circuit maintaining the high impedance state to limit current through the switch until the voltage across the sensing circuit decreases to a predetermined voltage amplitude;

a full wave rectifier means connected between the AC source and the sensing circuit for converting AC current through the load to a generally equivalent amount of unidirectional load current sensed by and routed through the sensing circuit; and

capacitor means for maintaining the voltage across the sensing circuit above the predetermined voltage amplitude to hold the sensing circuit at the high impedance state subsequent to sensing an overcurrent condition.

4,271,449

METHOD AND APPARATUS FOR PROTECTING ALTERNATING CURRENT CIRCUITS

Martin L. Grogan, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 4, 1979, Ser. No. 27,129
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—94 **4 Claims**

1. An apparatus for protecting a circuit from excessive current flow, comprising:

sense transformer means for sensing the current flow through the circuit;

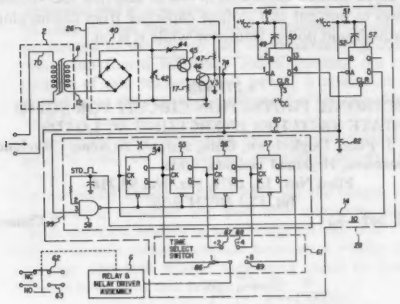
pulse shaping means for generating a sense pulse whose width is related to the rate of current flow into the sense transforming means;

1st single shot multivibrator means for generating a reference period at the occurrence of each sense pulse;

2nd single shot multivibrator means for providing a second pulse each time a sense pulse occurs;

comparator means for providing an enabling command as long as the sense pulse's width is greater than the reference period and to provide a reset at a fault condition

when the sense pulse's width is less than the reference period;



selectable time delay means for providing a command signal after a fault condition and the occurrence of a selectable number of the second pulses; and

relay means activated by the command signal.

4,271,450

CIRCUIT ARRANGEMENTS FOR THE CONTROL OF A BISTABLE RELAY

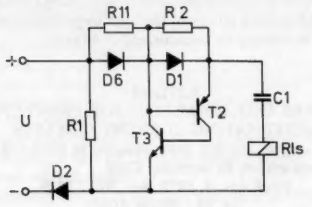
Hiromi Nishimura, and Hideki Fukuzono, both of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan and SDS-Electro GmbH, Deisenhofen, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,890

Claims priority, application Japan, Jun. 15, 1978, 53-73063; Jun. 15, 1978, 53-73067; Jun. 15, 1978, 53-73069; Sep. 25, 1978, 53-132113[U]; Oct. 19, 1978, 53-129378

Int. Cl.³ H01H *47/00, 47/32*

U.S. Cl. 361—155 **16 Claims**



1. A circuit arrangement for controlling a bistable relay in monostable fashion by the application and removal, respectively, of an excitation voltage, comprising

(a) a series circuit connected across the excitation voltage and including the relay coil, a capacitor and first and second diodes poled in forward direction with respect to the excitation voltage,

(b) ohmic resistors connected in parallel to each of said first and second diodes, and

(c) trigger switching means connected in parallel to said series-connected relay coil and capacitor, said trigger switching means being rendered conductive by a reverse voltage occurring across said second diode when said excitation voltage is removed.

4,271,451

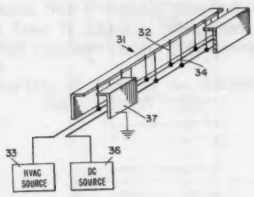
METHOD AND APPARATUS FOR CONTROLLING STATIC CHARGES

Bruce E. Metz, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jul. 20, 1976, Ser. No. 707,142

Int. Cl.³ H01T *19/00*

U.S. Cl. 361—213 **1 Claim**



1. Apparatus for controlling static charges on dielectric material comprising:

an ionizing member; and

power source and control means for applying sufficient AC high voltage to said ionizing member for producing an ionized field and for controlling the balance and magnitude of the directional conductivity of the ionized field to impart static charges of predetermined magnitude and polarity to said material, said ionizied field being spaced from said ionizing member such that the dielectric material can be freely moved therethrough in contact only with the ionized field;

wherein said ionizing member includes a first array of interconnected emitter points and a second array of interconnected emitter points positioned adjacent to said first array, said first and second arrays partially surrounded by a grounded shield, and wherein AC high voltage is applied to said first array of emitter points and said power source and control means includes means for applying a DC voltage of predetermined magnitude and polarity to said second array.

4,271,452

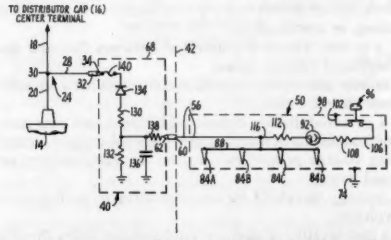
AUTOMOTIVE AIR CONDITIONING APPARATUS

Jimmy L. Lee, 2430 Stanwell Dr., Suite 190, Concord, Calif. 94520

Filed Jan. 22, 1979, Ser. No. 5,676

Int. Cl.³ H01T *19/00*

U.S. Cl. 361—231 **16 Claims**



1. A voltage converter for converting the ignition voltage of the engine of an automobile to a lower voltage suitable for operating an air anion generator located in the passenger compartment of said automobile, comprising:

voltage reducing circuit means having a high voltage terminal, electrical connecting means adapted to be connected to the circuit providing said ignition voltage to connect

the same to said high voltage terminal, and a low voltage terminal; and

current limiting means having a first terminal, a second terminal, and electrical connecting means adapted to interconnect said second terminal and said air anion generator;

said first terminal of said current limiting means being connected to said low voltage terminal of said voltage reducing circuit means.

4,271,453

IGNITER WITH COUPLING STRUCTURE

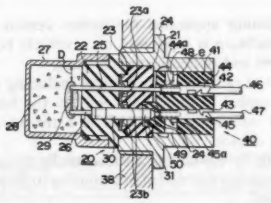
Tadashi Yajima, Akigawa; Makoto Yagi, Ohme; Masayoshi Katoh, Kawagoe; Takashi Ishii, Tokyo; Haruki Maruizumi, Hidaka, and Tadahiko Nagaoka, Sayama, assignors to Nissan Motor Company, Limited and Japan Aviation Electronics Industry, Limited, both of, Japan

Filed Jun. 18, 1979, Ser. No. 49,463

Claims priority, application Japan, Jul. 1, 1978, 53/79245

Int. Cl.[3] F23Q 7/00

U.S. Cl. 361—248 4 Claims



1. In an igniter having a heat generator responsive to an ignition signal from an ignition signal source for igniting powder in a container, the combination comprising:

a first connector which includes a first pair of electrical conductors and first insulating support means for supporting said first pair of electrical conductors, one end of each of said first pair of conductors being connected to said heat generator, the other end of each of said first pair of electrical conductors being structurally adapted to electrically connect to a second pair of electrical conductors on a second connector;

filter means in electrical circuit with one of said first pair of electrical conductors for passing substantially only an ignition signal electrically fed through said one of said first pair of conductors;

resilient means electrically connecting said first pair of electrical conductors with each other, said resilient means resiliently contacting at least one of said first pair of electrical conductors;

a second connector which includes a second pair of electrical conductors and second insulating support means for supporting said second pair of electrical conductors, one end of each of said second pair of conductors being connected to said ignition signal source, the other end of each of said second pair of electrical conductors being structurally adapted to electrically connect to said first pair of electrical conductors when said second connector is connected to said first connector; and

means for engaging said second connector with said first connector so that said second pair of conductors electrically engages said first pair of conductors and said resilient means is removed from contact with said first pair of conductors.

4,271,454

CAPACITOR OF DISK SHAPE WITH LIQUID COOLING

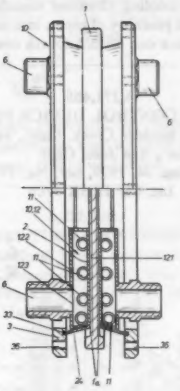
Alois Knobl, Selb; Alfred Zeitner, Hohenberg; Helmut Krockow, Hof, and Hermann Schmaus, Selb, all of Fed. Rep. of Germany, assignors to Draloric Electronic GmbH, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 16,955

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1978, 7807683[U]; Apr. 27, 1978, 7812819[U]; Jul. 22, 1978, 7822053[U]; Oct. 20, 1978, 7831244[U]

Int. Cl.[3] H01G 1/08

U.S. Cl. 361—274 5 Claims



1. A water cooled capacitor, comprising:

(A) a disk made of a dielectric material, said disk having first and second opposed flat main surfaces;

(B) first and second electrodes located on said first and second main surfaces, respectively, so as defined opposed electrodes of said capacitor;

(C) first and second cooling chambers connected to said first electrode at radially opposite locations of said disk;

(D) third and fourth cooling chambers connected to said second electrode at radially opposed locations of said disk;

(E) a first plurality of pipes extending from said first cooling chamber to said second cooling chamber, said first plurality of pipes each defining an arc of a respective circle which is co-axial with said disk, said first plurality of pipes being in contact with said first electrode and providing a fluid path extending between said first and second cooling chambers;

(F) a second plurality of pipes extending from said second cooling chamber to said first cooling chamber, said second plurality of pipes each defining an arc of a respective circle which is co-axial with said disk, said second plurality of pipes being in contact with said first electrode and providing a fluid path extending between said second and first cooling chambers;

(G) a third plurality of pipes extending from said third cooling chamber to said fourth cooling chamber, said third plurality of pipes each defining an arc of a respective circle which is co-axial with said disk, said third plurality of pipes being in contact with said second electrode and providing a fluid path extending between said third and fourth cooling chambers;

(H) a fourth plurality of pipes extending from said fourth cooling chamber to said third cooling chamber, said fourth plurality of pipes each defining an arc of a respective circle which is co-axial with said disk, said fourth plurality of pipes being in contact with said second electrode and providing a fluid path extending between said fourth and third cooling chambers;

(I) a first connection coupled to said first cooling chamber for enabling cooling liquid to be pumped into said first

cooling chamber and a second connection coupled to said second cooling chamber for enabling cooling liquid to leave said second cooling chamber whereby liquid pumped into said first cooling chamber circulates through said first and second plurality of pipes, into said second cooling chamber and then out of said second cooling chamber; and

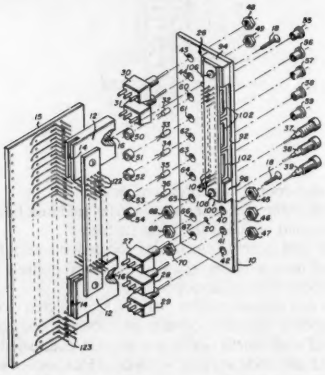
(J) a third connection coupled to said third cooling chamber for enabling cooling liquid to be pumped into said third cooling chamber and a fourth connection coupled to said fourth cooling chamber for enabling cooling liquid to leave said fourth cooling chamber whereby liquid pumped into said third cooling chamber circulates through said third and fourth plurality of pipes, into said fourth cooling chamber and then out of said fourth cooling chamber.

4,271,455

INDICATOR AND CONTROL DEVICE FOR PC BOARDS

Ralph J. McComas, Boulder Creek, Calif., assignor to Perception Electronics, Inc., San Jose, Calif.

Filed Sep. 24, 1979, Ser. No. 77,924
Int. Cl.³ H05K *7/06*
U.S. Cl. 361—331 **12 Claims**



1. An indicator and control device for PC boards and the like comprising:

an elongated generally rectangular component mounting plate having a front surface, a rear surface and a longitudinal axis, said plate being provided with at least one elongated aperture lying parallel to and laterally offset from said longitudinal axis, and at least one other aperture;

an elongated indicator means affixed to said rear surface so as to be viewable through said elongated aperture;

a manually operable electrical component mounted within said other aperture;

a pair of insulating standoff members disposed along said longitudinal axis and provided with slots for receiving an edge of a circuit board;

means attaching said standoff members to the rear surface of said mounting plate,

a first terminal board attached to one side of said standoff members and having biasing elements mounted thereon;

a second terminal board attached to the opposite side of said standoff members; and

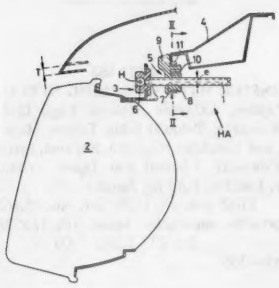
means for electrically interconnecting said indicator means, said electrical component, the biasing elements of said first terminal board and said second board, whereby said indicator and control device may be attached to a PC board by lodging an edge thereof within the slots of said standoff members, and may be electrically connected thereto by wiring said second terminal board to the electrical circuits of said PC board.

4,271,456

ADJUSTING APPARATUS FOR MOTOR VEHICLE HEADLAMPS

Heinz Dick, Odenthal, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 10, 1979, Ser. No. 65,402
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2847990
Int. Cl.³ B60Q *1/06*
U.S. Cl. 362—66 **3 Claims**



1. An adjusting apparatus for motor vehicle headlamps, wherein a headlamp is supported on a vehicle body through one fixed point and two adjusting devices,

at least one of said adjusting devices including an adjusting screw coupled at one of its ends to the headlamp and threaded intermediate its ends in a threaded bore of a retaining device,

the retaining device having a substantially cylindrical body that is rotatably journalled in a housing orifice in a vehicle body panel,

the threaded bore receiving said adjusting screw having its axis eccentrically parallel to the axis of rotation of the cylindrical body of the retaining device,

positioning means on the retaining device for rotating the latter to cause the adjusting screw to be swung laterally of the axis of rotation of the cylindrical body to adjust the vertical position of the headlamp,

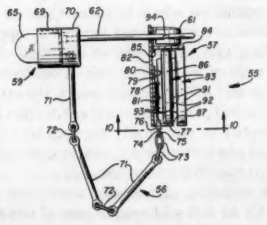
and coacting means on the retaining device and vehicle body panel engageable to hold the retaining device in adjusted position.

4,271,457

INTERMITTENT LIGHT CIRCUIT BODY MOVEMENT ACTUATED JEWELRY

Danny W. Martin, 2704 Brookridge La., St. Charles, Mo. 63301

Filed Mar. 20, 1979, Ser. No. 22,196
Int. Cl.³ F21L *15/08*; A44C *7/00*; H01H *35/02*
U.S. Cl. 362—104 **8 Claims**



1. In an article of jewelry having intermittent lighting for use as an earring worn in pierced ears: light means mounted on

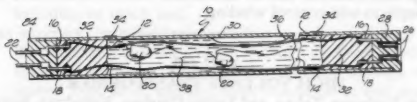
structure including an earring post; said earring post being electrically conductive and electrically connected to one terminal of said light means; electrically conductive earring clip member adapted to be removably affixed to the end of said earring post opposite said light means with said earring post extendable through a wearer's earlobe; said earring clip member comprising a battery carrier means; battery means mounted in said battery carrier means; said earring post with said clip member-battery carrier means affixed thereto providing electrical connection between one terminal of said battery means and said one terminal of said light means; and, circuit completing and breaking means of an articulating electrically conductive material interconnect linkage for electrically connecting the other terminal of said battery means and the other terminal of said light means and being subject to intermittent circuit opening and closing with body movements of said wearer producing intermittent actuation of said light means.

4,271,458

DECORATIVE LIGHT TUBING

Benjamin B. George, Jr., Santa Ana, Calif., assignor to Tivoli Industries, Inc., Santa Ana, Calif.

Filed Mar. 10, 1980, Ser. No. 128,349
Int. Cl.³ F21V *15/00, 23/00, 31/00;* **F21P** *1/02*
U.S. Cl. 362—236 **4 Claims**



1. An improved low voltage decorative tubing wherein strings of miniature unbased lamps are connected in parallel between a pair of spaced electrical wire conductors within a hollow transparent tube, the improvement comprising:

a viscous dielectric liquid substantially filling the interior of the tube; and,

means for forming a fluid type seal at opposite ends of the tube to prevent the escape of said liquid.

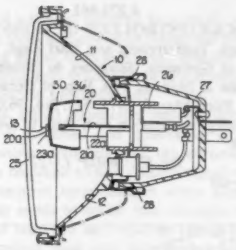
4,271,459

VEHICLE HEADLAMP ASSEMBLY

Haydn James, Rugeley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 17, 1979, Ser. No. 4,234
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—346 **9 Claims**

1. A vehicle headlamp assembly comprising a reflector having upper and lower reflective portions separated by a split line, and a filament shield, said filament shield comprising a pair of plate portions disposed on opposite sides of a location at which a lamp filament is located in use, each plate portion being substantially aligned with the split between the upper and lower reflective portions and extending forwardly of the headlamp assembly substantially axially of the reflector, and said shield permitting light to pass from said location for reflection off both reflective portions of the reflector but preventing light passing from said location for reflection off the split line



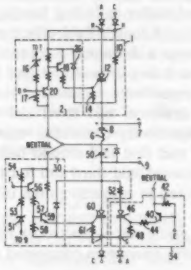
and also preventing light reflected from the envelope of a bulb mounted with its filament at said location from passing for reflection off said upper reflective portion.

4,271,460

SOFT TURN-ON POWER

Richard H. Baker, Bedford, Mass., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Feb. 22, 1979, Ser. No. 14,108
Int. Cl.³ H02H *7/10*
U.S. Cl. 363—49 **10 Claims**



1. A dual DC voltage power supply providing positive and negative DC voltages including soft turn-on circuitry to limit inrush current to substantially uncharged capacitive loads, said power supply comprising:

a plurality of rectifier circuits providing at least one positive DC voltage level and at least one negative DC voltage level from at least one AC input voltage;

a plurality of power terminals for receiving said rectified voltage;

an output terminal for each said DC voltage level;

a reference terminal for connection to a point of reference potential;

control means for each said DC voltage level, said control means being coupled in parallel relation with said capacitive load and responsive to the voltage developed across said load attaining a predetermined value whereupon said control means provides a firing signal;

turn-on current suppression means for each DC voltage level, said suppression means having a relatively high impedance connected between one of said power terminals and said output terminal, wherein said impedance limits the magnitude of current supplied to said load in the absence of said control firing signal; and

switching means having a main current conduction path coupled in parallel with each said suppression impedance, said switching means being responsive to said control

firing signal to provide a low impedance by-pass across said suppression impedance.

4,271,461

CLOCK-CONTROLLED DC CONVERTER

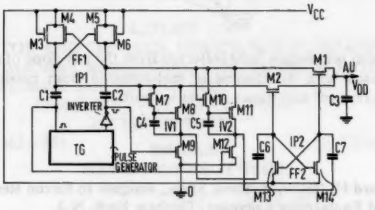
Kurt Hoffmann, Taufkirchen, and Karl Zapf, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,070

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821418

Int. Cl.³ H02P 13/22

U.S. Cl. 363—60 33 Claims



1. A clock-controlled d.c. converter, comprising:

a pair of clock pulse inputs each adapted to receive clock pulse trains which are inverted with respect to one another;

a first pulse level shifter including flip-flop comprising first, second, third and fourth field effect transistors each including a source, a drain and a control electrode,

said sources and drains of said first and second field effect transistors respectively connected together, and said sources and drains of said third and fourth field effect transistors respectively connected together,

said sources of said first and second field effect transistors and said sources of said third and fourth field effect transistors connected to respective ones of said pair of clock pulse inputs,

said drains and said control electrodes of said first, second, third and fourth transistors connected to a supply potential,

said sources of said first and second field effect transistors constituting a first output of said first pulse level shifter and said sources of said third and fourth field effect transistors constituting a second output of said first pulse level shifter, said first and second outputs carrying level shifted pulse trains which are inverted with respect to each other;

fifth and sixth field effect transistors each having a source-drain path connected to a respective output of said first pulse level shifter and connected to the source-drain path of the other constituting an output for said converter, and each having a control electrode,

first and second voltage doublers each including first and second inputs and an output, said first input of said first voltage doubler connected to receive the inverted clock pulses and said second input of said first voltage doubler connected to said first output of said first pulse level shifter, said first input of said second voltage doubler connected to receive non-inverted clock pulses and said second input connected to said second output of said first pulse level shifter, said voltage doublers operable to supply double voltage clock pulses at their outputs;

a second pulse level shifter including a bistable flip-flop having first and second inputs connected to respective outputs of said voltage doublers, and first and second outputs connected to respective control electrodes of said fifth and sixth field effect transistors.

4,271,462

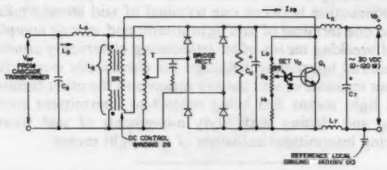
POWER CONVERTER AND REGULATION APPARATUS

Philip H. Peters, Greenwich, N.Y., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Sep. 20, 1978, Ser. No. 944,089

Int. Cl.³ H02P 13/26

U.S. Cl. 363—84 6 Claims



1. Power converter and regulation apparatus for supplying a DC load comprising: inverter means for producing a radio frequency (RF) voltage; an inductive voltage divider including first inductor means of the saturable reactor type in series with a second inductor said RF voltage being imposed across said voltage divider; RF cascade transformer means for connecting said inverter means to said voltage divider but conductively isolating them; rectifier means connected across said first inductor means for providing a DC output voltage; voltage level sensing means for comparing said dc output voltage with a reference voltage and providing an error signal, said first inductor means including a control winding responsive to said error signal to change said division of said RF voltage to compensate for changes in said load the windings of said first inductor means being connected relative to said control winding so that the RF current in said first inductor means does not couple to said control winding.

4,271,463

HIGH VOLTAGE TRANSFORMER

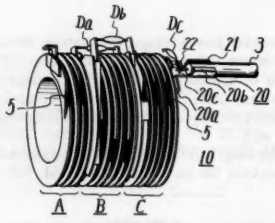
Ken Tanimura, Tokyo, and Toshio Onodera, Kamakura, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 20, 1979, Ser. No. 68,084

Claims priority, application Japan, Aug. 24, 1978, 53-115842[U]

Int. Cl.³ H02M 7/00; H01F 15/10

U.S. Cl. 363—126 5 Claims



1. A high voltage transformer comprising a magnetic core, a primary winding, a bobbin, a secondary winding of fine wire wound on said bobbin, a relatively heavy lead wire extending out from said secondary winding, a projection of resilient insulating material attached to said bobbin and one end of said secondary winding connected thereto, a diode with two leads and one lead attached to said one end of said secondary winding on said projection, an insulating connector mounted on said bobbin and having one end connected to the other lead of said diode, said connector formed with a longitudinal gap extending lengthwise thereof and being of a size large enough to receive the end of said heavy wire snapped thereinto and said heavy lead wire and said other lead of said diode electrically connected together.

4,271,464

SWITCHING ARRANGEMENT FOR THE INPUT OF INTERRUPT COMMANDS AND THE OUTPUT OF INTERRUPT ACKNOWLEDGMENT FOR COMPUTER SYSTEMS

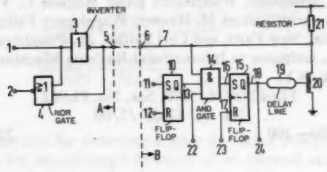
Richard W. MacMillan, Kolbermoor, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,111

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744111

Int. Cl.³ G06F *3/04, 9/00*

U.S. Cl. 364—200 **8 Claims**



1. A switching arrangement for a computer system for receiving interrupt command signals and providing interrupt acknowledgment signals over a common line having a single input/output terminal, said switching arrangement comprising:

an interrupt generator including an input for receiving an interrupt command signal of a first logic level, an inverter for inverting the interrupt signal to a second logic level, a first output connected to said single input/output terminal of the common line, and a second output;

a controllable switch connected to the common line and including an input; and

an interrupt command logic including an input connected to the common line to receive the second logic level, control inputs for receiving control signals to switch through the second logic level, and an output connected to said input of said controllable switch for causing operation of said controllable switch to place an interrupt acknowledgment signal of the first logic level on the common line and at said single input/output terminal,

said interrupt generator further including a gate having a first input connected to said input of said interrupt generator, a second input connected to said single input/output terminal of the common line and an output for providing an output signal in response to the interrupt command and interrupt acknowledgment signals.

4,271,465

INFORMATION HANDLING UNIT PROVIDED WITH A SELF-CONTROL TYPE BUS UTILIZATION UNIT

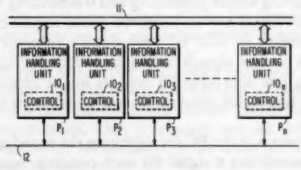
Toshinori Ohtsuka, and Takashi Toyohuku, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1978, Ser. No. 948,272

Claims priority, application Japan, Oct. 3, 1977, 52-118879

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—200 **9 Claims**



1. An information handling unit comprising:

a bus terminal coupled to a common signal bus for transferring and receiving an information signal to and from said common bus;

an internal signal bus;

an address signal generator generating an own name address signal;

a single control terminal coupled to a single control signal line separate from said common signal bus for transferring and receiving to and from said single control line a control signal indicating non-utilization of said common signal bus by an information handling unit;

a bus available signal generator directly coupled to said single control terminal and generating a bus available signal indicating availability of the common signal bus utilization in response to said control signal received from said single control terminal and when said information handling unit needs to utilize said common signal bus;

a gate coupled between said address signal generator and said bus terminal, said gate transferring said own name address signal to said bus terminal in response to said bus available signal generated by said bus available signal generator;

a transfer line connected to said bus terminal and transferring a name address signal received at said bus terminal;

a comparison means coupled to said address signal generator and said transfer line for comparing said own name address signal with said name address signal received via said transfer line;

means for generating a grant signal indicating grant of the common signal bus utilization in response to the result of a comparison in said comparison means; and

a control signal generator generating the own control signal indicating non-utilization of said common signal bus by the own information handling unit when said grant signal is not generated, the output of said control signal generator being directly coupled to said single control terminal, whereby said single control signal line always indicates utilization or nonutilization condition of said common signal bus by any information handling unit, and said bus available signal generator always detects the condition of said single control signal line.

4,271,466

DIRECT MEMORY ACCESS CONTROL SYSTEM WITH BYTE/WORD CONTROL OF DATA BUS

Mitsuru Yamamoto, Kawasaki; Jun Arai, Yokosuka; Takao Isogawa, and Isamu Hasebe, both of Yokohama, all of Japan, assignors to Panafacom Limited

Continuation-in-part of Ser. No. 658,854, Feb. 10, 1976, abandoned. This application Nov. 21, 1978, Ser. No. 962,647

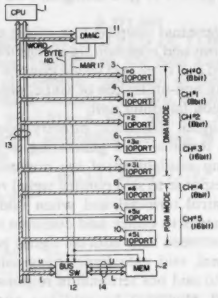
Claims priority, application Japan, Feb. 20, 1975, 50-21242; Feb. 20, 1975, 50-21243; Feb. 20, 1975, 50-21244; Feb. 20, 1975, 50-21245

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **21 Claims**

1. A direct memory access control system comprising at least a central processing unit, a plurality of input/output control ports, and a memory, said central processing unit and said plurality of input/output control ports being connected to a data bus, said plurality of input/output control ports being directly accessible to said memory, said memory being capable of storing and providing data in a selectively designated one of several predetermined formats including word unit transfer and byte unit transfer, said word unit comprising upper byte information and lower byte information, said system further comprising a direct memory access control unit for supplying a word/byte designating signal and a signal designating a byte position at the time of byte designation, and a bus switching unit connecting said memory to said data bus, and connected to said direct memory access control unit for receiving therefrom said word/byte designating signal and said signal designating a byte position, and responsive thereto for controlling direct access to said memory by alternately providing said upper byte information and said lower byte information in said word unit

when said byte unit transfer is selectively designated, and by providing said upper byte information and said lower byte information when said word unit transfer is selectively designated.

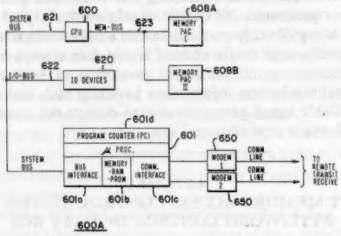


4,271,467

I/O PRIORITY RESOLVER

Thomas O. Holtey, Newton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1979, Ser. No. 477
Int. Cl.[3] G06F *9/18*
U.S. Cl. 364—200 **4 Claims**



1. A communication subsystem having a microprocessor and a plurality of communication lines coupled to a U-bus, an M-Bus coupled to said U bus, at least one memory coupled to said M-bus, and I-bus coupled to said U-bus, a plurality of registers coupled to said I-bus, and a priority resolving mechanism coupled to said microprocessor and said communication lines for resolving priority of requesting signal generated by said microprocessor and said plurality of communication lines for requesting access to said at least one memory, said priority resolving mechanism comprising:

(a) first means for storing first channel nunber signal indicative of said microprocessor or one of said communication lines being currently accessing said at least one memory;

(b) programmable read only memory means with a predetermined number of address locations for storing second channel number signals indicative of a next of said microprocessor or one of said communication lines to access said at least one memory, wherein address terminals of said programmable read only memory means are coupled to said microprocessor, said communication lines and said first means for receiving said requesting signals as address signals for addressing one of said predetermined number of address locations;

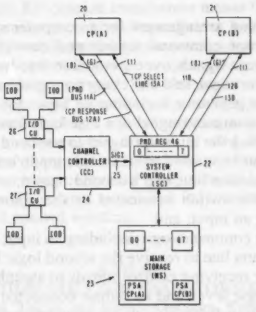
(c) third means coupled to said programmable read only memory means for receiving said second channel signals from said one of said predetermined address locations for storage in said first means when said currently operating microprocessor or said one of said communication lines has finished accessing said at least one memory.

4,271,468

MULTIPROCESSOR MECHANISM FOR HANDLING CHANNEL INTERRUPTS

Neal T. Christensen, Wappingers Falls; William C. Van Loo, Poughkeepsie; Robert H. Werner, Wappingers Falls; Joseph A. Wetzel, New Paltz, and Carl Zeitler, Jr., Poughkeepsie, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 6, 1979, Ser. No. 91,902
Int. Cl.[3] G06F *15/00*
U.S. Cl. 364—200 **26 Claims**



1. I/O interrupt handling means in a multiprocessor system including a shared main storage (MS), plural central processors (CPs), at least one input/output processor (IOP) capable of communicating plural levels of pending I/O interrupt requests (I/O IRs), each I/O IR requiring execution of an interruption handling program by any one of said plural CPs, and a system I/O interrupt controller in a system controller (SC), the I/O interrupt handling means comprising

an I/O interrupt pending register associated with said SC and having a plurality of positions respectively settable by plural levels of I/O IRs from the IOP, said positions each providing an empty/non-empty state signal for a respective queue in MS, each queue containing I/O IRs associated with a given I/O IR level,

broadcast means connecting the outputs of the positions of the pending register to each of the CPs,

accepting means in each CP connected to the broadcast means for accepting a highest-priority-unmask non-empty state position from the broadcast means as an accepted queue identifier when the CP is in an interruptable state, the accepting means generating and transmitting to the SC an accept signal and an accepted queue identifier signal,

selecting means in said SC immediately responsive to all received accept signals and queue identifier signals for selecting one accepting CP and its queue identifier, and the selecting means sending a select signal to each selected CP, and

inhibiting means in the SC for inhibiting the broadcast means from transmitting a signal for each pending register position associated with each selected queue identifier to all CPs except the CP selected for the selected queue identifier.

4,271,469

METHOD FOR DETECTING KNOCKING IN INTERNAL COMBUSTION ENGINE

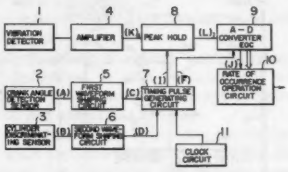
Hisasi Kawai, Toyohashi; Toshimitsu Ito, Toyota; Masakatsu Sanada, Susono, and Kazuo Iwase, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 28, 1979, Ser. No. 24,772

Claims priority, application Japan, Apr. 24, 1978, 53/49095

Int. Cl.³ G06F *15/20;* **G01M** *15/00*

U.S. Cl. 364—431 **4 Claims**



3. Apparatus for detecting engine knocking comprising:

means for monitoring vibrations of an internal combustion engine during the rotation of said engine;

means for sampling, during a predetermined interval close to the top dead center position of a piston of said engine, a peak magnitude of said monitored vibrations;

means for counting a predetermined number of rotations of said engine;

means for accumulating said sampled peak magnitude; for said predetermined number of rotations;

means for dividing said accumulated peak magnitude by said predetermined number of rotations to derive an average peak magnitude of vibrations;

means for dividing each of said sampled peak magnitude by said average peak magnitude to derive a magnitude ratio of each of said sampled peak magnitude relative to said average peak magnitude;

means for comparing each of said magnitude ratio with a predetermined reference ratio to produce a comparison output indicative of said magnitude ratio being in excess of said predetermined reference ratio;

means for counting a number of said comparison output;

means for dividing said counter number of said comparison output by said predetermined number of rotations to derive an average counter number; and

means for generating a knock signal indicative of the presence of knocking in said engine when said average counted number exceeds a predetermined value.

4,271,470

SERIAL DATA BUS FOR USE IN A MULTIPROCESSOR PARCEL POSTAGE METERING SYSTEM

Daniel F. Dlugos, Huntington, Conn., and Donald D. Harenberg, Placentia, Calif., assignors to Pitney Bowes Inc., Stamford, Conn. and Rockwell Intl. Corp., El Segundo, Calif.

Filed Feb. 21, 1979, Ser. No. 13,757

Int. Cl.³ G06F *15/20;* **G06G** *19/40*

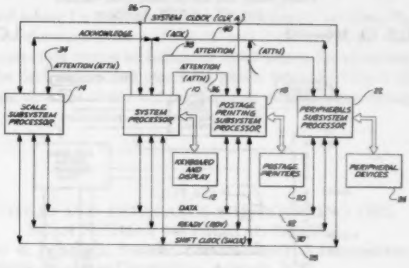
U.S. Cl. 364—466 **3 Claims**

1. For controlling the transfer of data in a multiprocessor postage metering system including a system processor, a scale subsystem processor for providing scale weight and status data and a postage printing system processor for accepting postage printer setting data and for providing printer status data, a data communications system comprising:

attention lines connecting the system processor to the scale subsystem processor and the postage printer subsystem processor for enabling the system processor to initiate communications with a selected one of the subsystem processors by transmission of an attention signal to the selected processor;

acknowledgement lines connecting the scale subsystem processor and the postage printer system processor to the system processor to enable a selected one of the subsystem processors to acknowledge receipt of an attention signal from said system processor;

ready lines connecting the scale subsystem processor, and the postage printer subsystem processor to the system



processor for conditioning a selected processor to accept data transmitted from another selected processor; and

a serial data bus common to all of the processors in the system for carrying data between communicating processors.

4,271,471

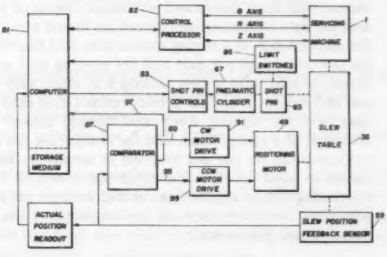
METHOD OF OPERATING A REMOTELY CONTROLLED TOOL POSITIONING TABLE

Raymond P. Castner, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 28, 1978, Ser. No. 974,159

Int. Cl.³ G05D *3/00;* **B65G** *47/96*

U.S. Cl. 364—474 **8 Claims**



1. A method of servicing a steam generator tubesheet with an end effector mounted on the free end of a rotatable slew table cantilevered from a carriage movable along a rotatable arm which rotates in a plane parallel to the tubesheet where the end effector cannot be positioned under all the holes solely by adjusting the positions of said rotatable arm and said carriage on said rotatable arm, said method comprising the steps of:

determining the angle that said cantilevered slew table must make relative to the carriage in order for said end effector to be positioned under a selected hole in the tubesheet;

driving the rotatable arm and the carriage on the arm to a slewing area where said cantilevered slew table can be rotated without interference to said determined angle relative to the carriage;

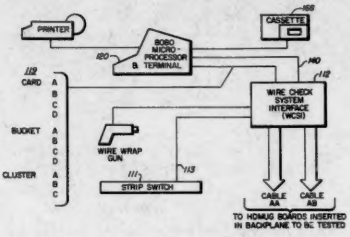
slewing the cantilevered slew table to said determined angular position; and

driving the rotatable arm and the carriage to the angular and longitudinal positions respectively that place the end effector under the selected hole taking into account the offset of the slew table.

4,271,472
WIRE WRAP OPERATOR CHECK SYSTEM

Robert C. Saunders; Dean T. Au; W. Ray Williams, and Donald Zurek, all of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed May 18, 1979, Ser. No. 40,250
Int. Cl.[3] G01R 31/02
U.S. Cl. 364—481 3 Claims



1. A wire check apparatus for verifying correct placement of a wire wrap tool on a pin in an array of wire wrap pins on a logic board comprising:

(a) a first means for wrapping and unwrapping a wire from any pin in said array of pins and for sensing the electrical condition on said pin;

(b) a second means for signalling when said verification is to be made;

(c) a third means for making electrical contact with said pins on said logic board and for subjecting a selectable correct pin in said array to a predetermined electrical condition, said selection of said correct pin being made by selection signals supplied to said third means;

(d) a fourth means connected to said first means, said second means, said third means and an outside source of pin data said pin data indicating the correct pin in said array of pins for an operation in a wiring transaction, said fourth means for decoding said pin data and for sending said selection signals to said third means causing it to select said correct pin and subject it to said predetermined electrical condition, and for sensing when said second means signals initiation of a comparison, and for comparing the electrical condition on the pin touched as sensed by said first means to what the electrical condition would be if placement of said first means was on said correct pin and for signalling the correctness or incorrectness of the placement of said first means.

4,271,473
CONTROL OF PARALLEL OPERATED TURBINES IN COGENERATION

Charles W. Ross, Hatboro, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Sep. 27, 1979, Ser. No. 79,278
Int. Cl.[3] G06F 15/46; F01D 17/00
U.S. Cl. 364—494 2 Claims

1. A control system for turbines in the utility part of an industrial plant using cogeneration, said control system being operable to control the relative quantities of steam supplied from a plurality of steam turbines to a common steam header which supplies process steam at a predetermined pressure while maintaining the electrical generation from generators connected to and driven by said turbines at a maximum consistent with the maintenance of an adequate control range for a header pressure control on those turbines assigned to maintain header pressure, comprising:

means for measuring header pressure,

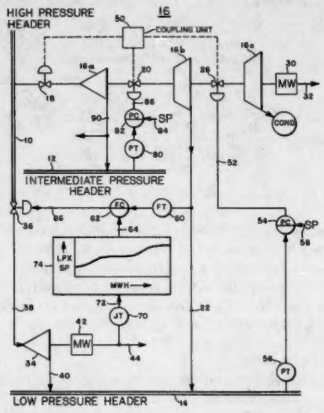
means for controlling a steam flow from a first turbine to the header so as to control the header pressure toward a set point;

means for measuring a quantity indicative of said flow from said first turbine; and

means for controlling the steam flow from another turbine supplying said header so as to maintain a predetermined relationship between the steam flow in said first and said other turbine,

said means including,

a throttle valve for controlling the steam flow to said header through said other turbine,



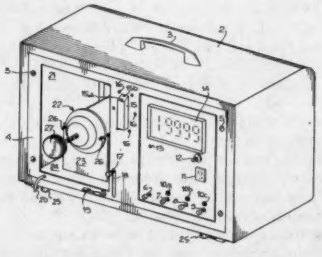
a function generator receiving as an input a signal indicative of the flow of steam from said other turbine to said header and producing as an output a set point value indicative of the desired flow of steam from said first turbine to said header, and

a controller responsive to the difference between said set point value and said measured steam flow from said first turbine for controlling said throttle valve to proportion the flow from said first and said other turbine as determined by the characteristic of said function generator.

4,271,474
APPARATUS FOR DETECTING AND MEASURING THE HYDROGEN CONTENT IN A LIQUID SUBSTANCE

Guy Belanger, and Gilles Missout, both of St-Bruno, Canada, assignors to Hydro-Quebec, Quebec, Canada

Filed Nov. 24, 1978, Ser. No. 963,518
Claims priority, application Canada, Sep. 18, 1978, 311484
Int. Cl.[3] G01N 27/46
U.S. Cl. 364—500 16 Claims



1. An apparatus for measuring the concentration of gaseous hydrogen dissolved in a liquid substance, comprising:

an electrochemical detection device for determining said concentration of hydrogen in said liquid substance, and generating a current having a value proportional to said

concentration; said detection device comprises: first and second electrodes; an electrolyte means, separating said electrodes for causing a reaction of oxidation of the hydrogen diffused through a polymeric membrane at said first electrode, and a reaction of reduction of an oxygen-containing gas at said second electrode so as to generate said current proportional to the concentration of gaseous hydrogen; and a polymeric membrane permeable to hydrogen, separating said liquid substance from said first electrode;

a device connected to said detection device to drain therefrom said liquid substance;

a display device for displaying the concentration detected by said detection device;

a circuit for amplifying a voltage corresponding to said current proportional to said concentration when said current flows through a load resistance mounted across the input of said amplifying circuit;

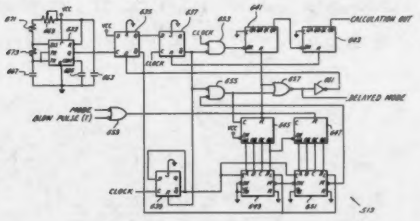
potentiometers acting on the amplifying circuit for controlling calibration and zero-setting of said display device; and

a control circuit for governing the operation sequence of said detection device, said drain device and said display device in accordance with a predetermined operating sequence, said control circuit comprising an oscillator-divider generating a signal corresponding to an adjustable unit time interval of said predetermined operation sequence; a divider receiving said unit time interval signal and feeding a first decoder, said first decoder energizing a display unit displaying a state of said predetermined sequence, and feeding a second decoder defining actuation instants of said drain device and said display device, said second decoder controlling, according to the state of the sequence defined by said divider, the time of setting into memory in said display device of a measure supplied by said detection device, and the time of starting and stopping said drain device said second decoder also generates a signal for blocking said oscillator-divider when said predetermined sequence is terminated.

4,271,475
APPARATUS FOR MEASURING THE FALL HEIGHT OF A PILE DRIVER RAM

Steven L. Sahajdak, Brunswick, Ohio, assignor to Pileco, Inc., Houston, Tex.

Filed May 7, 1979, Ser. No. 36,713
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—506 **11 Claims**



1. An apparatus for providing a digital indication of the stroke of the second of two consecutive blows delivered by a pile driving hammer where each of such consecutive blows produces a discrete sound, the apparatus comprising:

detection means for converting the sound produced by the first of such consecutive blows into a first electrical pulse and for converting the sound produced by the second of such consecutive blows into a second electrical pulse such that the time differential between said first and second electrical pulses is substantially equal to the time differential between the first of such consecutive blows and the second of such consecutive blows, said detection means including an output at which said first and second electrical pulses are provided;

computing means for calculating the value of x where

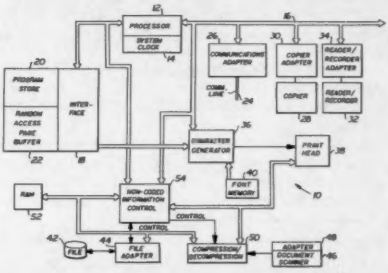
$$x = 4.01\ t^2 - 0.3$$

and where t is the time differential in seconds between the first electrical pulse and the second electrical pulse, said computing means including (i) input means for receiving the first and second electrical pulses from the output of said detector means and (ii) indicator means for providing a digital indication of x.

4,271,476
METHOD AND APPARATUS FOR ROTATING THE SCAN FORMAT OF DIGITAL IMAGES

Jeffrey B. Lotspiech, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 17, 1979, Ser. No. 58,321
Int. Cl.³ G06F *15/20*; H04N *5/02*
U.S. Cl. 364—515 **20 Claims**



1. A machine implementable method of changing the direction of scan of a digital image comprising the steps of:

storing a digital image having a first scan direction;

logically dividing the digital image into a plurality of sections;

removing the sections from the digital image, one at a time;

changing the scan direction of each section upon removal from the digital image, the scan direction being changed from the first scan direction to a different second scan direction; and

combining the sections into the digital image having the second scan direction.

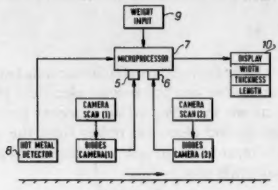
4,271,477
DETERMINING THE DIMENSIONS OF WORKPIECES

Gerald B. Williams, Port Talbot, Wales, assignor to British Steel Corporation, London, England

Filed May 21, 1979, Ser. No. 41,072
Claims priority, application United Kingdom, May 17, 1978, 20200/78
Int. Cl.³ G01B *11/04*
U.S. Cl. 364—563 **22 Claims**

10. Apparatus for measuring the width and/or thickness of a workpiece comprising a pair of imaging devices located at two positions displaced perpendicularly from the workpiece and laterally with respect to each other, said imaging devices being disposed so as to avoid obstruction of one of the images by the other image, the devices being focussable to provide images of a width plan of the workpiece, means for producing electrical signals representative of the image widths apparent at these

positions, means for processing said signals to provide signal components having the apparent widths in product and differ-



ence terms, and means for determining from the components the actual width and/or the thickness of the workpiece.

4,271,478
METHOD AND APPARATUS FOR MEASURING THE TRANSMISSION CHARACTERISTICS IN ELECTRICAL COMMUNICATION SYSTEMS

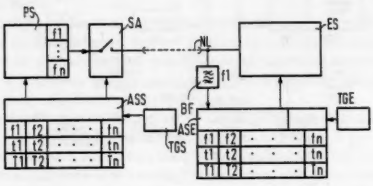
Helmuth Fink, Munich, and Karel Van der Gucht, Deisenhofen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,015

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817646

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—580 **7 Claims**



1. A method for measuring the characteristics of a transmission line in electrical communication systems, comprising the steps of, consecutively producing in a transmitter individual frequencies (f_1 through f_n) as measuring signals which are different in frequency, supplying said signals to the transmission line and emitting said consecutively produced individual frequencies (f_1 through f_n) according to a predetermined time program, receiving said emitted signals at the receiver, filtering out at least one of said received individual frequencies and using the time of arrival of said one selected individual frequency as a start signal from which a time program is initiated at the receiver which has the same time arrangement as the time program for the transmitting of the frequencies at the transmitter and measuring the transmission characteristics at the receiver for the individual frequencies (f_1 through f_n) according to the time program at the receiver.

4,271,479
DISPLAY TERMINAL WITH MODULARLY ATTACHABLE FEATURES

Harry Cheselka, Saugerties; William F. Nemecek, Kingston, and Dean A. Stockwell, Albany, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1977, Ser. No. 844,151

Int. Cl.³ G06F *9/18*

U.S. Cl. 364—900 **10 Claims**

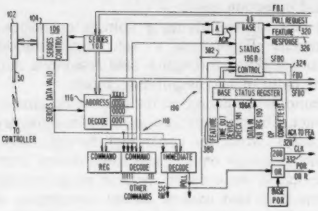
1. A display terminal including a base unit and feature units electrically attached to said base unit,

said base unit comprising a display and being characterized by having, within said base unit,:

an input-output interface for connection to a controller external to said terminal,

a bus-out and a bus-in connected to the interface to receive commands and data from said controller and to transmit data to said controller,

decoder means connected to said bus-out responsive to commands from the controller on said bus-out variously according to whether they are one of a plurality of classes, one of the classes being a general poll directed to the base and feature units in common, and another of said classes being characterized by containing a base or feature address,



base status means to indicate operative conditions in said base unit,

and base priority means responsive to said base status means and to status of said feature units, said priority means acting to register said operative conditions for first establishing an order of priority of resulting status within said base unit and, as a function of that status, to proceed in the absence of that base status to examine status of said feature units as a group, said bus-out and bus-in extending to said feature units to comprise electrical attachment of said base unit thereto.

4,271,480
APPARATUS ENABLING THE TRANSFER OF DATA BLOCKS OF VARIABLE LENGTHS BETWEEN TWO MEMORY INTERFACES OF DIFFERENT WIDTHS

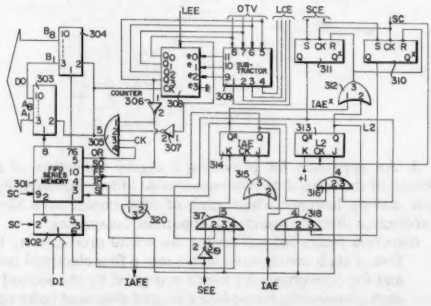
Daniel Vinot, Sucy-en-Brie, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

Continuation of Ser. No. 753,493, Dec. 22, 1976, abandoned. This application Apr. 14, 1978, Ser. No. 896,189

Claims priority, application France, Dec. 31, 1975, 75 40362

Int. Cl.³ G06F *3/00, 13/00*

U.S. Cl. 364—900 **14 Claims**



1. Apparatus for transferring data words between a first external device and a second external device, the two external devices having respective interfaces which transfer data in

data word blocks having respective different numbers of data words each, said apparatus comprising:

a source of clock pulses;

an apparatus ready output (IAE) for indicating when said apparatus is ready to receive new input data from one of the external devices;

an apparatus input (SEE) for receiving a signal indicating input data (DI) is available from said one of the external devices;

a series first-in-first-out (FIFO) memory type, said FIFO memory having a plurality of registers and operable when a data word is entered in its first register to transfer the data word to its last register, and operable to transfer each subsequently entered data word to a register which precedes the register in which the last word was entered;

a first storage means having a storage capacity of m data words and adapted for connecting to said one of the external devices for receiving and temporarily storing successive input data blocks of m words each, where m is set to equal the number of data words in each data word block transferred through the interface of whichever external device said first storage means is connected to;

means connecting said first storage means to the input of said FIFO memory for serially entering successive data words in the first register of said FIFO memory from said first storage means;

said FIFO memory having an input ready output (IR) for indicating when said first FIFO register is empty;

control circuitry responsive to said source of clock pulses and arranged, when said apparatus input data available input (SEE) receives a signal indicating data is available, to enable said first storage means for the clocking in of data and, upon a subsequent clock pulse, to enable said FIFO memory to clock in data from said first storage means; and, including control means responsive to said FIFO memory input ready output (IR) indicating the first FIFO register is empty and the external input data available signal (SEE) is not present, to provide an apparatus ready output signal (IAE);

a second storage means having a storage capacity of n data words for serially receiving and temporarily storing successive input data words in response to clock pulses until n data words have been stored, thereby forming output data blocks of n data words, and said second storage means adapted for connection to the other of the external devices for outputting data blocks of n data words to the other external device, where n is set to equal the number of data words in each data word block transferred through the interface of whichever external device said second storage means is connected to;

means connecting the input of said second storage means to the output of said FIFO memory for serially transferring successive data words from the last register of said FIFO memory until n data words have been transferred; and

counting and control circuitry for determining when said second storage means contains n data words ready for output to the other of the external devices, said counting and control circuitry, in such event, inhibiting data output from said FIFO memory and providing an apparatus output data ready output.

4,271,481

MICRO COMPUTERIZED ELECTRONIC POSTAGE METER SYSTEM

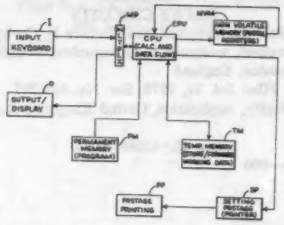
Frank T. Check, Jr., Orange; Alton B. Eckert, Jr., Norwalk, and Joseph R. Warren, Stamford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 694,813, Jun. 10, 1976, which is a continuation of Ser. No. 536,248, Dec. 23, 1974, Pat. No. 3,978,457. This application Apr. 26, 1978, Ser. No. 900,089

Int. Cl.³ G06F *15/24*

U.S. Cl. 364—900 **15 Claims**

1. In an electronic postage meter including postage printing means and input means for receiving data relating to an amount of postage to be printed, said printing means including a source of data signals corresponding to postage being printed; the improvement comprising integrated circuit digital electronic data processing means physically positioned within said meter



and including storage means for storing postage data and storage means for storing instructions for controlling processing steps for said meter, said processing means being coupled to receive said data and data signals and having an output coupled to control said printer.

4,271,482

DATA PROCESSING SYSTEM WHICH PROTECTS THE SECRECY OF CONFIDENTIAL DATA

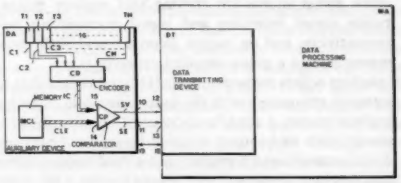
Georges J. L. Giraud, Le Vesinet, France, assignor to Compagnie Internationale pour l'Informatique -CII-Honeywell Bull, Paris, France

Filed May 12, 1978, Ser. No. 905,453

Claims priority, application France, May 26, 1977, 77 16098

Int. Cl.³ G06F *7/04;* G06K *7/00*

U.S. Cl. 364—900 **10 Claims**



1. In combination with a data processing system which protects the secrecy of confidential information including a data processing machine with which an operator may carry on a confidental dialogue, the data processing machine being provided with a data transmitting device for communicating with the machine, and said system including an auxiliary device, the auxiliary device having contacts adapted for electrical connection to the data transmitting device, the auxiliary device further having memory means for the permanent storage of a code key for controlling access to the machine and means for comparing this code key with a predetermined confidential code to authorize access to the machine, the improvement comprising said auxiliary device having:

a plurality of key entering contact members entirely separate from the contacts for electrical connection to the data transmitting device of the data processing machine and not connectable to the data processing machine;

integrated connection means respectively connecting the key entering contact members to the code key comparing means; and

contact means external to said auxiliary device for generating, as a result of external contact with a predetermined number of said key entering contact members, a set of basic items of information to form said predetermined confidential code for comparison with said code key;

whereby surreptitious detection of the basic items of infor-

mation by monitoring the electrical connection between the auxiliary device and the date transmitting device is prevented.

4,271,483

DELAY CIRCUITS

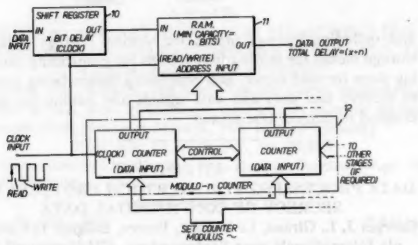
John L. E. Baldwin, Croydon, and Terence E. Corbyn, London, both of England, assignors to Independent Broadcasting Authority, London, England

Filed Jul. 31, 1978, Ser. No. 929,797

Claims priority, application United Kingdom, Aug. 4, 1977, 32769/77

Int. Cl.[3] **G06F** *13/00*

U.S. Cl. 364—900 **2 Claims**



1. Digital delay apparatus for delaying digital signals by a fixed time equivalent to x+n bits of information, comprising

(a) a source of clock signals;

(b) shift register means (**10**) including a data input terminal adapted for connection with a digital signal source, a clock input terminal adapted for connection with said clock signal source for shifting said register means between signal receiving and signal transmitting modes, respectively, and an output terminal, said shift memory means having a given standard capacity (x);

(c) random access memory means (**11**) including a data input terminal connected with the output terminal of said shift register means, a read/write control input terminal connected with said source of clock signals, at least one address control input terminal, and a final output terminal, said random access memory means having a bit capacity that is small relative to that of said shift register means; and

(d) addressing means (**12**) including a variable modulus counter connected with said address control input terminal for controlling the address locations of information stored in said random access memory means, said variable modulus counter having a clock input terminal connected with said source of clock signals, and a data input terminal for setting the counter modulus to a desired delay value (n), said random access memory means and said addressing means being operable by said clock signals to cause the total delay of the output signal appearing at the output terminal of said memory means to equal the sum of the storage capacities of said shift register means and the set delay capacity of said random access memory means.

4,271,484

CONDITION CODE ACCUMULATOR APPARATUS FOR A DATA PROCESSING SYSTEM

Arthur Peters, Sudbury, and Virendra S. Negi, Pepperell, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 3, 1979, Ser. No. 841

Int. Cl.[3] **G06F** *11/30*

U.S. Cl. 364—900 **11 Claims**

1. Apparatus for signalling the generation of predetermined condition codes in a data processing system, said apparatus comprising:

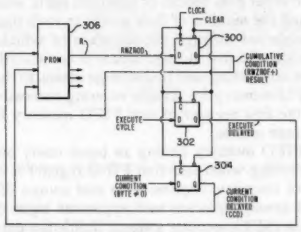
A. first means for receiving a first signal having either a first state or a second state indicative of a predetermined condition code;

B. second means for receiving a cycle timing signal;

C. first storage means having a plurality of inputs and an output;

D. second storage means having an input and an output, said input of said second storage means coupled to said output of said first storage means and said output of said second storage means coupled to a first of said inputs of said first storage means;

E. means for coupling said first and second means for receiving to a second and third of said inputs respectively of said first storage means;



F. third means for receiving a clock signal;

G. means, included in said first storage means and responsive to the receipt of said clock signal and said cycle timing signal, as indicated by said third and second means for receiving, respectively, for supplying a signal at the output of said first storage means to cause the state of said second storage means to be set to the state of said first signal; and

H. means also included in said first storage means for inhibiting a change in state of said second storage means when said second storage means is set to the second state of first signal, whereby said second storage means provides an indication of the past occurrence of said predetermined condition code.

4,271,485

BUBBLE DOMAIN STORAGE USING IMPROVED TRANSFER SWITCH

George S. Almasi, Katonah; Wilhelm E. Bogholtz, Wappingers Falls, and George E. Keefe, Montrose, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 709,358, Jul. 28, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,612

Int. Cl.[3] **G11C** *19/08*

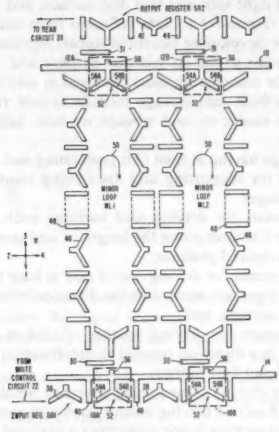
U.S. Cl. 365—16 **24 Claims**

15. A transfer switch for selectively moving magnetic bubble domains in two different directions in a magnetic medium, comprising:

propagation means for moving bubble domains along paths which define a Y, one propagation path being from one arm of the Y to and along the other arm of the Y, and a second propagation path being from one arm of said Y to and along the stem of said Y, where the angle α between the propagation paths along the arms of the Y is greater than 0° but less than 180°, and the angle β between a propagation path along one arm of the Y and a propagation path along the stem of the Y is greater than 90° but less than 180°,

current-carrying conductor means for producing a potential well along the stem of said Y and below the intersection of the paths along the arms of the Y in order to determine whether said bubble domains follow said first or second

path through said transfer switch, said current carrying conductor being located between said magnetic medium and said Y propagation means and having a width less than the length of the stem of said Y propagation means,



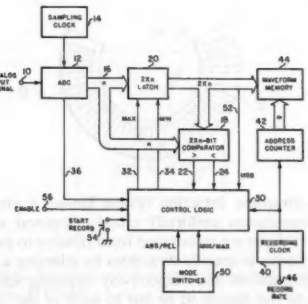
means for producing a reorienting magnetic field for moving said domains along said propagation means while said potential well is being produced.

4,271,486

WAVEFORM STORAGE SYSTEM

Thomas P. Dagostino, Portland, and Luis J. Navarro, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 30, 1979, Ser. No. 61,720
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—45 **10 Claims**



1. A waveform storage system, comprising:

a waveform memory;

means for converting an analog signal to successive digital data representative of instantaneous signal values at a predetermined first rate;

means for receiving said successive digital data from said conversion means and detecting therefrom digital data representative of maximum signal deviation values occurring over an interval determined by a second rate; and

means for storing said detected digital data in said waveform memory at said second rate,

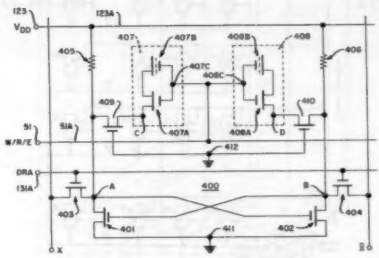
wherein said first rate is greater than or equal to said second rate.

4,271,487

STATIC VOLATILE/NON-VOLATILE RAM CELL

Donald G. Craycraft, Spring Valley; George C. Lockwood, Dayton, and Darrel D. Donaldson, Kettering, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 13, 1979, Ser. No. 93,780
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **6 Claims**



1. A memory cell having both volatile and non-volatile binary data storage capability comprising a bistable multivibrator having selectable first and second stable, volatile operating states and including a pair of output terminals having voltages thereon representing the operating state thereof and a pair of non-volatile, threshold-alterable capacitors each coupled to an associated one of said output terminals with its gate electrode independent of said associated output terminal and adapted to receive write, restore and erase voltage signals, said multivibrator being constructed with low supply voltage, n-channel SIS device technology and further comprising a pair of field effect transistor of a depletion or enhancement type each coupled between one of said non-volatile capacitors and an associated output terminal to form a pair of nodes therebetween, the gates of said transistors being adapted to receive a prearranged bias voltage such that, upon receipt by said gate electrodes of said non-volatile capacitors of a write voltage signal at least several times greater in magnitude than said supply voltage, the voltage on one of said pair of nodes bootstraps to a magnitude substantially greater than said supply voltage, thereby providing effective channel shielding in the associated non-violatile capacitor while isolating said bootstrapped voltage from said output nodes.

4,271,488

HIGH-SPEED ACQUISITION SYSTEM EMPLOYING AN ANALOG MEMORY MATRIX

Charles L. Saxe, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 13, 1979, Ser. No. 29,807
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—230 **8 Claims**

1. A high-speed acquisition system, comprising:

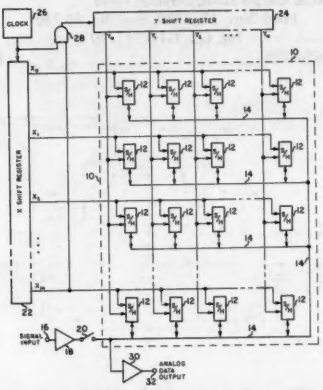
analog signal input means and analog output means;

an analog bus coupled to said input means and said ouptput means;

a plurality of analog memory means disposed in M rows and N columns, said analog memory means being coupled to said analog bus; and

means for activating said analog memory means in a predetermined manner to provide store and readout operations, said means for activating said analog memory means comprising an X shift register having M outputs and a Y shift register having N outputs, M row control lines connected to the outputs of said X register, N column control lines connected to the outputs of said Y register, and means for operating said X shift register at at least one predetermined rate and for operating said Y shift register at a rate 1/M times the rate at which said X register is operated,

wherein said row and column control lines form an M×N matrix of electrical intersections each of which corresponds to an analog memory means, each of said analog



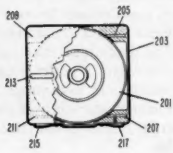
memory means being connected to both a predetermined row control line and a predetermined column control line for activation thereby.

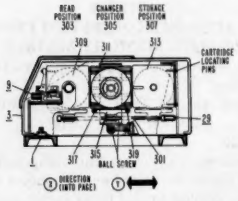
4,271,489

OPTICAL DISC PLAYER SYSTEM

Bohdan W. Siryj, Cinnaminson, and Alan P. Gilson, Collingswood, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 23, 1979, Ser. No. 41,583
Int. Cl.³ G11C *13/04*
U.S. Cl. 369—38 **4 Claims**





1. In a data storage system for optically reading information stored on an optical disc, a high speed storage and retrieval apparatus, comprising:

a storage module, including:

a. a stationary storage structure having a plurality of storage locations along the length thereof; and

b. a plurality of discs having information stored therein, each of said discs being enclosed in a protective cartridge, said protective cartridge being arranged in said storage locations of said storage structure;

a reader, including:

a. means for providing a beam of coherent light;

b. means for placing one of said protective cartridges having one of said discs enclosed therein in a reading position of said reader;

c. means for focusing said light beam to a spot on a surface of said disc in said reading position;

d. means for establishing relative motion between said focused light spot and said disc surface; and

e. means, responsive to light reflected from said disc surface, for developing electrical signals representative of information stored on said disc surface; and

a changer for transferring discs enclosed in said protective cartridges from said storage module to said reader and from said reader to said storage module, said changer including:

a. a carriage having at least two positioning and retracting carriers for supporting said discs being transferred by said changer

b. first means for driving said carriage such that said carriage traverses along the length of said storage module to a desired position;

c. second means for driving one of said at least two carriers in a direction normal to the direction of movement of said carriage; and

d. third means for driving another of said at least two carriers in a direction parallel to the direction of movement of said first carrier;

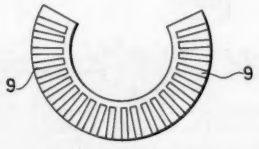
e. said first driving means being operated simultaneously with said second driving means when said one of said at least two carriers is not supporting a disc and with said third driving means when said another of said at least two carriers is not supporting a disc.

4,271,490

ULTRASONIC DETECTION SYSTEM

Kiyomi Minohara; Akira Sugiyama; Hiroshi Nakai; Masajiro Iida; Hideharu Morimatsu, and Yuzo Kobayashi, all of Nishinomiya, Japan, assignors to Furuno Electric Co., Ltd., Nagasaki, Japan

Filed Dec. 12, 1978, Ser. No. 968,710
Claims priority, application Japan, Dec. 16, 1977, 52-152195
Int. Cl.³ G01S *3/86*
U.S. Cl. 367—122 **17 Claims**



1. In an ultrasonic detection system having a plurality of ultrasonic transducers uniformly closely disposed such that their active surfaces are maintained fixed relative to each other for forming beams in specific directions by selecting a group of ultrasonic transducers and respectively applying appropriate phase-shifts to the signals to be fed to each of the ultrasonic transducers, the improvement comprising a magnetic or electrically conductive shield between any two adjacent transducers for suppressing sidelobes in said beam pattern.

4,271,491

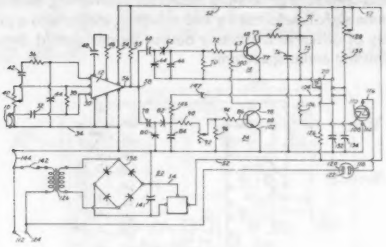
INTRUDER ALARM SYSTEM

Ronald R. Simpson, 7062 Wolff, Westminster, Colo. 80030

Filed Nov. 20, 1978, Ser. No. 962,243
Int. Cl.³ G08B *13/00*
U.S. Cl. 367—136 **3 Claims**

1. In an intruder alarm system which comprises at least one electromechanical transducer means providing electrical signals in response to vibrations incident on said transducer, first amplifier means having an input and an output connected to

receive and amplify signals from the transducer, first detection and storage means responsive to relatively short term signals connected to the output of the first amplifier means and to the input of a second amplifier means having an output, a second detection and storage means responsive to relatively long term signals connected to the output of the first amplifier means and



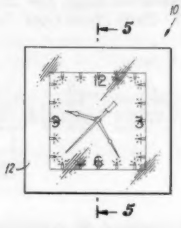
to the input of a third amplifier means having an output connected to alter the signal response of said second amplifier means to effectively subtract the relatively long term signals from the output of said second amplifier means and alarm means connected to said output of said second amplifier means and responsive to the relatively short term signal output to indicate an alarm condition.

4,271,492

SOUND ACTUATED CLOCK-MIRROR

Anthony M. Battista, 2126 Pierce St., Hollywood, Fla. 33020

Filed Jan. 17, 1980, Ser. No. 112,728
Int. Cl.³ G04B *47/00, 19/30*
U.S. Cl. 368—10 **10 Claims**



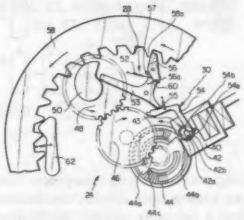
1. A sound actuated clock-mirror comprising, in combination, peripheral housing having front and back ends, a partially silvered flat mirror secured to and enclosing the front end of said housing, a flat clockwork support panel fixed within said peripheral housing in spaced relation with respect to said half-silvered mirror, a clockwork supported by said support panel and having its hands located within the space between said clockwork panel and said half-silvered mirror for reading against the inner surface of said support panel and for selective observation through said mirror, electrical lighting means within the space between said half-silvered mirror and said clockwork support panel, and an energization circuit for said electrical lighting means, said energization circuit comprising a sound-actuated electronic switch for selectivly energizing said lighting means upon the creation of a pre-determined sound.

4,271,493

ELECTRONIC TIMEPIECE

Munetaka Tamaru, No. 32-18, 2-chome, Igusa, Suginami-ku, Tokyo, and Toshikazu Hatuse, No. 23-10, 4-chome, Shibakubo-cho, Tanashi-shi, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 883,576, Mar. 6, 1978, abandoned. This application Jun. 19, 1979, Ser. No. 50,109
Claims priority, application Japan, Mar. 8, 1977, 52/24418
Int. Cl.³ G04B *19/24*
U.S. Cl. 368—28 **4 Claims**



1. In an electronic timepiece powered by a battery and having a first display device to provide a display of current time information and a second display device to provide a display of additional information other than said current time information, the improvement comprising:

an oscillator circuit providing a relatively high frequency signal;

a frequency divider circuit responsive to said relatively high frequency signal to provide a plurality of low frequency signals;

a control circuit responsive to said plurality of low frequency signals to provide an output signal, said control circuit being also responsive to said low frequency signals to provide a control signal every 24 hours;

a driver circuit normally responsive to said output signal to provide a first drive signal, said driver circuit being also responsive to said control signal to provide a second drive signal;

an electro-mechanical transducer responsive to said first drive signal to actuate said first display device in one direction to provide said display of current time information, said electro-mechanical transducer being also responsive to said second drive signal to rotate in another direction;

a wheel train driven by said electro-mechanical transducer to actuate said first display device;

an auxiliary driving source drivably connected to said wheel train, said auxiliary driving source including means for accumulating energy by the action of said wheel train;

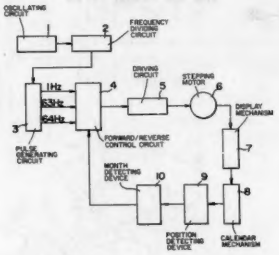
locking means for normally holding said auxiliary driving source in a locked state, said locking means being released by said electro-mechanical transducer when it is rotated in said another direction in response to said second drive signal, for thereby releasing energy of said auxiliary driving source;

drive means powered by said auxiliary driving source and actuating said second display device when said auxiliary driving source is released by said locking means.

4,271,494
CORRECTING DEVICE FOR CALENDAR IN AN ANALOG TYPE ELECTRONIC WATCH

Joichi Miyazaki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 5, 1978, Ser. No. 948,783
Claims priority, application Japan, Oct. 6, 1977, 52/120302
Int. Cl.³ G04B *19/24*
U.S. Cl. 368—34 **16 Claims**



1. A stepping motor driven timepiece, comprising: a stepping motor; an analog time display mechanism driven by said stepping motor; a calendar display mechanism driven by said time display mechanism and including a 31-day date indicating member and a date driving wheel for driving said 31-day date indicating member when said date driving wheel is driven in a forward direction, and said date driving wheel being ineffective to drive said date indicating member when said date driving wheel is driven in a reverse direction; controllable motor driving means including a time standard oscillator for driving said stepping motor and normally operative to drive the time display mechanism and the calendar display mechanism forward at normal time and date advancing speed; and a month change detecting device including means for detecting a month change from an even days month to an odd days month, said month change detecting device including control circuit means cooperative with said calendar display mechanism and said means for detecting a month change for controlling said motor driving means to return said date driving wheel to a starting date advancement position at which said date driving wheel starts to advance at the end of an even days month, for then controlling said motor to rotate at high speed in the forward direction until the date displayed by said date indicating member has rapidly passed through a position displaying the 31st day of the month to a position displaying the first day of the month and said date driving wheel is at an advance completed position, and for thereafter allowing said motor to drive said calendar display mechanism at the normal speed, when the time displayed is normal time.

4,271,495
ELECTRONIC CLOCK WITH A CHIME SYSTEM

Bernhard Scherzinger, Esslingen, and Hans Flaig, Schramberg, both of Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,239
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850286
Int. Cl.³ G04C *21/12;* G04B *47/00;* G10F *1/00;* G10H *1/02*
U.S. Cl. 368—75 **12 Claims**

1. An electronic clock having a chime system for electronically reproducing predetermined tone signal sequences at predetermined instances in time, comprising:

a source of a standard frequency signal;

a time indicating device operated at a rate corresponding to said standard frequency signal;

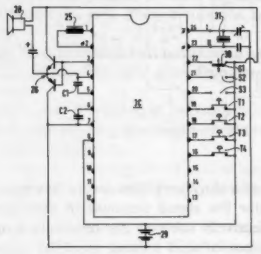
a memory circuit having data representing at least one tone signal sequence stored therein;

means for recalling the tone signal sequence data stored in said memory circuit synchronously with real time;

means responsive to said standard frequency signal for producing a plurality of different tone signals;

means responsive to the tone signal sequence data recalled from said memory circuit for selecting certain ones of said plurality of different tone signals;

audio-spectrum generating means for converting each of the tone signals selected by said selecting means into a plurality of different frequency output signals spaced throughout the audio-spectrum;



means for mixing said plurality of output signals for each selected tone signal and producing a signal having a voltage representative of the plurality of different frequencies;

means for decaying the voltage signal in accordance with a predetermined function;

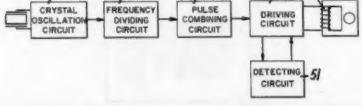
means for combining the decaying voltage signals corresponding to the various selected tone signals; and

means for converting the combined signals into an audible signal.

4,271,496
ELECTRONIC WATCH

Masaharu Shida; Akira Torisawa; Makoto Ueda; Masaaki Mandai; Katsuhiko Sato, and Kazuhiro Asano, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Apr. 20, 1978, Ser. No. 898,396
Claims priority, application Japan, Apr. 23, 1977, 52-47095
Int. Cl.³ G04B *19/04;* G04C *3/00*
U.S. Cl. 368—80 **5 Claims**



3. In an electronic timepiece, the combination comprising:

an oscillator circuit for generating an oscillating time standard signal;

pulse generating means for dividing the time standard signal and for generating output pulse signals comprised of pulses having different pulse widths;

a stepping motor comprised of a stator, a rotor and a coil;

drive circuit means responsive to pulse signals from said pulse generating means for periodically applying electrical driving pulses to said motor coil to rotate said rotor at a normal periodic rate and responsive to a control signal for energizing said motor coil to rotate said rotor at a rate different from the normal periodic rate; and

detecting means for detecting whether or not said rotor had rotated in response to a driving pulse and for applying a control signal to said drive circuit means to control said drive circuit means to energize said motor coil and rotate said rotor at a rate different from said normal periodic rate

to indicate that the electrical driving pulse was ineffective to rotate said rotor.

4,271,497

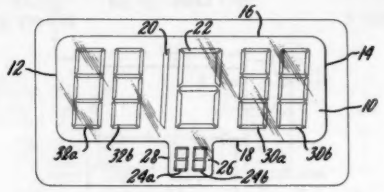
QUADRI-BALANCED DIGITAL TIME DISPLAYS

Berj A. Terzian, 330 Madison Ave., New York, N.Y. 10017

Continuation-in-part of Ser. No. 861,115, Dec. 16, 1977. This application Mar. 13, 1978, Ser. No. 886,121

Int. Cl.³ G04C *19/00, 17/00;* **G09F** *9/00*

U.S. Cl. 368—82 **32 Claims**



18. A quadri-balanced digital time keeping method which comprises:

(a) displaying the digit value of an hour,

(b) displaying during a first portion of the hour, minute digit values in a readout position which trails the displayed hour and which comprises a relatively upper part of that trailing position,

(c) displaying during a second portion of the hour, minute digit values in a readout position which trails the displayed hour and which comprises a relatively lower part of that trailing position,

(d) displaying during a third portion of the hour, minute digit values in a readout position which leads the displayed hour and which comprises a relatively lower part of that leading position; and

(e) displaying during a fourth portion of the hour, minute digit values in a readout position which leads the displayed hour and which comprises a relatively upper part of that leading position.

4,271,498

WATCH

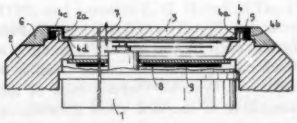
Roberto Zafferri; Ali Schneiter, and Rene Besson, all of Neuchatel, Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed Nov. 7, 1978, Ser. No. 958,408

Claims priority, application Switzerland, Nov. 7, 1977, 13629/77

Int. Cl.³ G04C *21/16;* **G04B** *37/00, 39/00*

U.S. Cl. 368—250 **20 Claims**



1. A watch comprising:

a casing including a supporting member,

a crystal having a plane and including an edge portion at the periphery of the plane by which the crystal is coupled to the supporting member,

an electro-mechanical transducer coupled to the crystal, and

a resilient annular connecting member coupling the crystal to the supporting member, the connecting member including: A. an outer portion secured to the supporting member, B. an inner portion rigidly connected with the edge portion of the crystal and C. a free portion having a width and thickness and coupling together the outer and inner portions, the free portion having a ratio of its width and thickness sufficient to allow the connecting member to work in flexion so that the crystal is movable perpendicular to its plane and is operable as a vibration transmitting member.

4,271,499

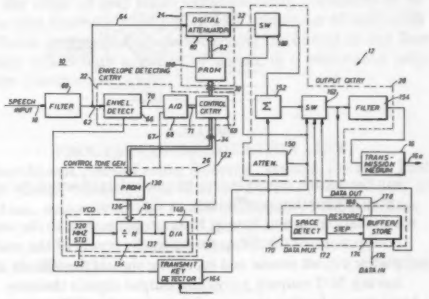
METHOD AND APPARATUS FOR DIGITALLY IMPLEMENTING A LINKED COMPRESSOR-EXPANDER TELECOMMUNICATIONS SYSTEM

J. Howard Leveque, Harper's Ferry, W. Va., assignor to H.F. Communications Corporation, Frederick, Md.

Filed Jul. 12, 1978, Ser. No. 923,959

Int. Cl.³ H04J *3/18*

U.S. Cl. 370—7 **46 Claims**



1. A digital speech modulator for modulating syllables of a speech signal onto a transmission medium, the modulator including a digital compressor circuit comprising:

(a) voltage attenuator circuit means for controllably attenuating a given syllable of the speech signal by a value determined in response to a first plurality of binary input signals;

(b) means for generating said first plurality of binary input signals collectively to be representative of the amplitude variance of said syllable,

(c) control tone generator circuit means for producing a control tone signal where frequency is representative of the amplitude variance of said syllable; and

(d) output circuit means for combining the compressed speech signal and the control tone signal for transmission onto said transmission medium.

4,271,500

DEVICE FOR CONVERTING A NON-UNIFORMLY SAMPLED SIGNAL WITH SHORT-TIME SPECTRUM TO A UNIFORMLY SAMPLED SIGNAL

Tore Fjällbrant, Hökasvägen, pl 67, 430 80 Hovas, Sweden

Filed Feb. 1, 1979, Ser. No. 8,616

Claims priority, application Sweden, Feb. 13, 1978, 7801614; Jan. 19, 1979, 7900488

Int. Cl.³ G10L *1/06;* **G06G** *7/19, 7/30*

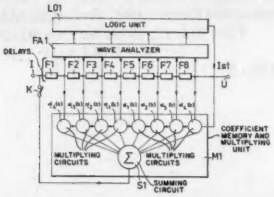
U.S. Cl. 370—23 **5 Claims**

1. A device for converting a non-uniformly sampled signal with a short-time spectrum to a uniformly sampled signal, the device comprising:

a delay chain including an input to which the non-uniformly sampled signal is applied, an output from which the uniformly sampled signal is supplied, N number of delay means each having an input and output and providing a time delayed output signal of the signal applied to the

input thereof, the delay means being connected together in series at N number of connections;

a multiplying unit including summing circuit means having inputs and an output for providing an output signal which is the sum of the input signals applied thereto, N number of multiplying circuit means each having an input and output, each input being connected to one connection between the serially connected delay means and receiving a signal therefrom and the outputs being connected to the inputs of the summing circuit means and applying output signals thereto, and store means for storing a plurality of multiplication coefficients sets for use in the multiplying circuit means, the multiplying circuit means for multiplying the signals input thereto by one selected set of the sets of multiplication coefficients in the store;



wave analyzer means having N inputs connected to the same connections of the delay means as the inputs of the multiplying circuit means and receiving signals therefrom, and having N/2 outputs providing output signals thereon;

logic means having inputs connected to the N/2 outputs of the wave analyzer means for outputting a control signal to the store means of the multiplication unit in response to a comparison of the amplitude of the signals output from the wave analyzer means to select one of the sets of multiplication coefficients for use in the multiplying circuit means;

the wave analyzer means providing output signals from the input signals according to the formulae;

$$y_i = \left[\sum_{k=-N/2}^{N/2} x_k \cos\left((|k| - 0{,}5)(i - 0{,}5) \cdot \frac{2\pi}{N} \right) \right]^2 + \left[\sum_{k=-N/2}^{N/2} x_k \sin\left(\frac{k}{|k|} (|k| \; 0{,}5)(i - 0{,}5) \frac{2\pi}{N} \right) \right]^2$$

where $k \neq 0$ and $1 \leqq i \leqq \frac{N}{2}$ N for N even and

$$y_i = \left[\sum_{k=\frac{-N+1}{2}}^{\frac{N-1}{2}} x_k \cos\left(k \cdot i \cdot \frac{2\pi}{N} \right) \right]^2 + \left[\sum_{k=\frac{-N+1}{2}}^{\frac{N-1}{2}} x_k \sin\left(k \cdot i \cdot \frac{2\pi}{N} \right) \right]^2$$

where $1 \leqq i \leqq \frac{N-1}{2}$ for N odd

where x_k with $-N/2 \leqq k \leqq N/2$ are the signals from the N connections of the delay chain, and y_i through $y_{N/2}$ are the output signals from the wave analyzer means to the inputs of the logic means; and

switch means for connecting the output of the summing circuit means to the input of the delay chain when samples are lacking in the non-uniformly sampled signal, to provide the uniformly sampled signal.

4,271,501

SPLITTER/COMBINER NETWORK

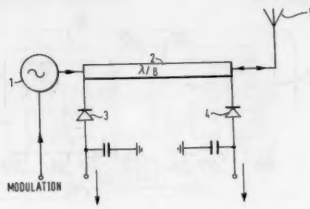
Ian A. W. Vance, Newport, and Michael R. Overy, Alton, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,744

Claims priority, application United Kingdom, Nov. 14, 1978, 44368/78

Int. Cl.³ H04B *7/24*; H04J *15/00*

U.S. Cl. 370—24 **2 Claims**



1. A splitter/combiner network for connection between a source of frequency modulated carrier wave signals and an antenna, the network comprising a length of transmission line having a pair of similar diode detectors connected thereto one at each end and with the same polarity with respect to the line the electrical length of which is one eighth of a wavelength at the carrier frequency.

4,271,502

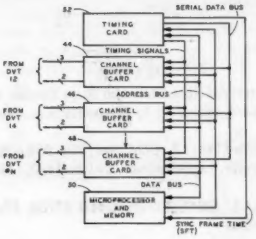
DIGITAL VOICE CONFERENCER

Michel M. H. Goutmann, Fort Washington, and Robert C. Harper, Oreland, both of Pa., assignors to Magnavox Government and Industrial Electronics Co., Fort Wayne, Ind.

Filed Jun. 19, 1979, Ser. No. 50,030

Int. Cl.³ H04M *3/56*

U.S. Cl. 370—62 **5 Claims**



1. Apparatus for digitally conferencing a plurality of voice digitizer signals, each of the signals forming a series of bit sequences each having a predetermined number of bits and a uniquely positioned sync bit therein, each of the sequences being representative of encoded vocal information exchangeable among respective ones of a corresponding plurality of conferees, comprising:

means adapted to receive the digitizer signals for detecting the sync bit, said sync bit being indicative of the beginning of the associated bit sequence;

means connected to said detecting means for commonly aligning said bit sequences within one period of a repetitive time interval, each of said aligned bit sequences being associated with respective ones of the conferees; and

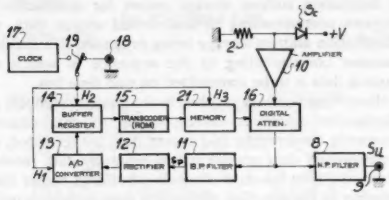
means connected to receive said aligned bit sequences for predeterminedly selecting at least one of said bit sequences during each of said time intervals for distribution to se-

lected remaining ones of the conferees for providing a conference.

4,271,503
AUTOMATIC CONTROL DEVICE FOR A RECEIVER USING A PILOT

Gregoire Eumurian, and Jean-Pol Levan, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 15, 1978, Ser. No. 960,779
Claims priority, application France, Nov. 15, 1977, 77 34240
Int. Cl.³ H04J 1/02
U.S. Cl. 370—74 **5 Claims**



1. A device for automatically controlling the gain of a receiving channel carrying high-frequency message signals from a transmission path to a load, said message signals being subjected to varying degrees of attenuation in passing over said transmission path and being accompanied by a pilot oscillation of predetermined frequency having a constant amplitude level at the point of origin, comprising:

digitally settable attenuation means in said receiving channel;

filter means connected to said receiving channel for extracting said pilot oscillation therefrom;

rectifying means connected to said filter means for producing a continuous voltage of a magnitude varying with the amplitude of the received pilot oscillation;

an analog/digital converter connected to said rectifying means for translating the magnitude of said voltage into bit combinations; and

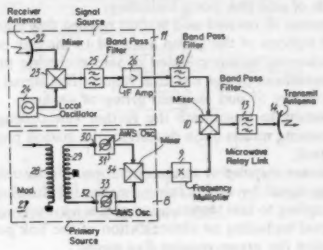
transcoding means including a read-only memory connected to said analog/digital converter for emitting predetermined binary words in response to being addressed by said bit combinations, said binary words being fed to a control input of said attenuation means for establishing therein a step-down factor complementing the degree of attenuation experienced on said transmission path.

4,271,504
FREQUENCY MODULATORS FOR USE IN MICROWAVE LINKS

Pierre C. Brossard, 9, Rue des Fleurs, Montigny-le-Bretonneux, France (78190), and Jeannine L. G. Henaff, 3 Ter, Place Marquis, Clamart, France (92140)

Continuation of Ser. No. 837,527, Sep. 29, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,482
Claims priority, application France, Oct. 7, 1976, 76 30685
Int. Cl.³ H04J 1/04, 1/08, 1/14
U.S. Cl. 370—76 **8 Claims**

1. A frequency modulator comprising two separate oscillator means having center frequencies separated by a predetermined frequency value, means for controlling each of said oscillator means responsive to a modulating signal applied individually to an input terminal on each of said two oscillator means in opposite phases respectively, first means for mixing output signals from said two oscillator means for delivering a frequency modulated signal centered around a frequency corresponding to said predetermined frequency value, each of said oscillator means including a quadripole ASW (acoustic surface wave) oscillator having a feedback branch extending from an output transducer to an input transducer, said feedback branch including a conventional amplifier means and a voltage controlled variable phase shifter, two input terminals on each of said voltage controlled variable phase shifters, one of said input terminals being connected to receive said modulating signal

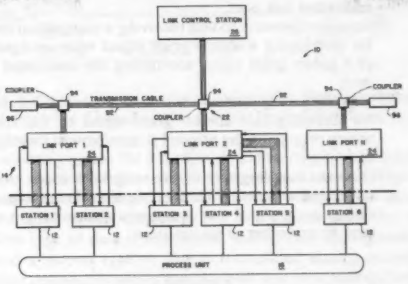


and the other of said input terminals being connected to receive said feedback from said output transducer of said ASW oscillator, and second means for mixing the output of said first mixing means with a source of signals in a microwave telephone transmission system.

4,271,505
PROCESS COMMUNICATION LINK

Robert Menot, North Easton; Robert E. Willard, Foxboro; Paul D. Griem, Medway, and Guy E. Devine, Plainville, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Jul. 2, 1979, Ser. No. 54,201
Int. Cl.³ H04J 6/00
U.S. Cl. 370—85 **18 Claims**



18. In a system for controlling a complex industrial process of the type having a large number of process conditions, such as temperature, fluid flow rate, and so forth, which conditions are to be maintained at respective set point magnitudes alterable in accordance with certain changeable process requirements, said control system comprising a plurality of separate but interactive stations organized in a number of preselected groups, each of said stations developing station request flag signals when communication is required by any of said stations with another of said stations; at least some of said stations being arranged to be coupled to corresponding process control unit means including control units of the type which are responsive to condition measurement signals and are operable to produce control signals for respective process devices such as flow control valves functioning to adjust process variables to maintain corresponding process conditions at selected set-point values;

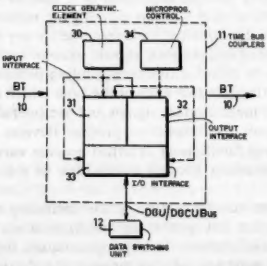
said process control system further including a process communication link providing communication between any one of said stations developing a request flag signal and a second station to which a message is to be directed by said requesting station; said process communication link comprising:

(a) a plurality of link ports each assigned to a corresponding one of said preselected groups of stations;
(b) transmission means interconnecting all of said link ports and including means to provide bi-directional communication therebetween;
(c) each of said link ports including:
(1) means to receive said station request flag signals from all stations of the group assigned to the link port;
(2) scanning means coupled to said receiving means and operable to detect a station request flag signal received from any of said assigned group of stations;
(3) means to deactivate the further functioning of said scanning means upon detection of a station request flag signal;
(4) means responsive to the detection of a station request flag signal by said scanning means for developing and coupling to said transmission means a group request flag signal including an identification of the link port originating the group request flag signal;
(d) a link control coupled to said transmission means and including:
(5) means to receive all of the group request flag signals from said link ports;
(6) scanning means coupled to said receiving means (5) and operable to detect a group request flag signal received from any of said link ports;
(7) means responsive to the detection of a group request flag signal for developing and coupling to said transmission means a group grant signal including an identification of the link port for the station to be granted communication access to said transmission means;
(e) all of said link ports further including:
(8) means coupled to said transmission means to receive all of the group grant signals produced by said link control station and to recognize the signals identifying the associated link port;
(9) means responsive to said receiving a recognition means for developing a station grant signal upon recognition of a group grant signal identifying the associated link port;
(10) means jointly operable with said responsive means (9) for directing said station grant signal to the station which originated the original station request flag signal; and
(11) means coupling any of the assigned stations to said transmission means whereby a station upon receipt of a station grant signal can commence transmitting a message to any other of said stations.

4,271,506
HIGH SPEED DATA SWITCHING NODE

Guillaume Broc, Paris, and Edouard Asseo, Sainte Genevieve des Bois, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,194
Claims priority, application France, Aug. 3, 1978, 78 22966
Int. Cl.[3] H04J *3/02*
U.S. Cl. 370—89 **11 Claims**

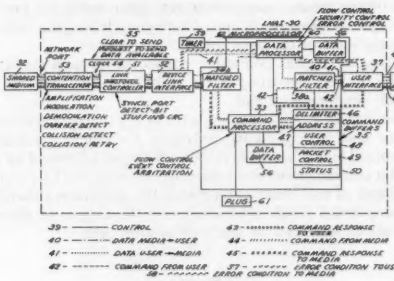


1. A data switching node for switching data originating from a plurality of source data switching units to a plurality of destination data switching units connected by means of time bus connectors to a looped unidirectional time bus wherein the total information carrying capacity ofsaid time bus is time division multiplexed into a plurality of separate data channels comprising data switching control unit means for the connection of said source and destination data switching units, characterized in that the system further comprises means to simultaneously switch data on said time bus between a plurality of said sources and destinations, said switching means being incorporated in said time bus connectors, each of which comprises:
(a) source data storage means for data received directly from source data switching units,
(b) destination address storage means for destination addresses corresponding to said stored source data, said destination address storage being organised in a specified manner corresponding to the sequence in which said source data is to be transmitted on said time bus,
(c) channel storage means wherein the channel numbers and destination addresses corresponding to data channels currently transmitting said source data are recorded, and
(d) destination data storage means whereby data received from said time bus data channels is buffered before transmission to the specified destination data switching unit.

4,271,507
COMMUNICATION BROADCAST CHANNEL INTERFACE

Melvin G. Gable, Ypsilanti; Richard H. Sherman, Plymouth, and Vadivelu Jeyabalan, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1979, Ser. No. 46,578
Int. Cl.[3] H04J *6/00*
U.S. Cl. 370—94 **16 Claims**



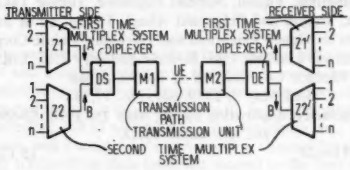
1. A data communication network comprising:
a shared broadcast communication medium for carrying packet switched information;
a plurality of user devices, such as data terminal equipment, for using said communication medium;
a plurality of device interface means for coupling user devices to said communication medium, receiving user information from a user device for assembly into data packets for transmission on said communication medium, receiving data packets from said communication medium for disassembly into data to be transmitted to a user device, each of said interface means having a user port coupled to at least one of said user devices and a network port coupled to said communication medium, and including data transfer means for transmitting and receiving information over said medium; and
each of said interface means including a command means for defining parameters of communication control which determine by their values the packet assembly and disassembly operations, packet addressing functions, type of packet service, start/stop user device characteristics and

error reporting functions for use in conjunction with a user, said command means being responsive to a plurality of said users for the purpose of altering the parameters of communication control.

4,271,508
METHOD FOR TRANSMITTING DATA

Erwin Schenk, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,554
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832855
Int. Cl.³ H04J 3/06
U.S. Cl. 370—106 **4 Claims**



1. A circuit arrangement for transmitting data between two time multiplex systems via a common transmission path, comprising: first and second transmitter side time multiplex systems producing binary characters, and first and second receiver side time multiplex systems; a transmitter side diplexer means connected to outputs of the transmitter side first and second time multiplex systems for alternately switching through to the transmission path via a transmission unit frames of binary characters of the first and of the second time multiplex systems, frames of the first system having a first synchronization word and frames of the second system having a second synchronization word; a receiver side transmission unit connected to the transmission path; a receiver side diplexer means connected at an output of the receiver side transmission unit for alternately assigning the binary character frames to the receiver side first and second time multiplex systems, said receiver side diplexer means after recognition of the first synchronization word in one of the receiver side time multiplex systems producing a correct assignment of the binary character frames relative to the first and second receiver side time multiplex system; and

said receiver side diplexer means including means for exchanging the binary character frames being received by the first and second receiver side time multiplex systems when the receiver side second time multiplex system recognizes the first synchronization word.

4,271,509
SUPERVISORY SIGNALING FOR DIGITAL CHANNEL BANKS

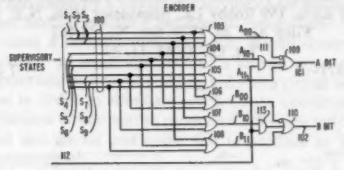
Stephen J. Brolin, Livingston, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 13, 1979, Ser. No. 57,333
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110 **10 Claims**

1. In a digital transmission system in which information signals are transmitted as a serial pulse stream and in which regularly recurring time slots of said pulse stream are reserved for supervisory signaling, a supervisory state signaling system characterized by

means for utilizing alternate supervisory time slots to represent one bit position of a two bit position supervisory signaling channel,

means for assigning any one of at least three bit patterns to said one bit position, and

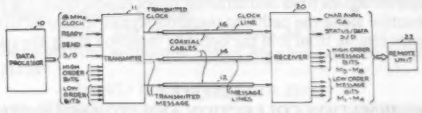


means for combining bit patterns in said alternate and in intermediate supervisory time slots to represent a plurality of distinguishable supervisory states.

4,271,510
SHIFT-REGISTER TRANSMITTER FOR USE IN A HIGH SPEED, LOW NOISE DIGITAL DATA COMMUNICATION SYSTEM

Floyd W. Looschen, Laguna Beach, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 883,302, Mar. 3, 1978, Pat. No. 4,225,752.
This application Jul. 19, 1979, Ser. No. 58,907
Int. Cl.³ H04J 3/12; H04L 25/45
U.S. Cl. 370—110 **8 Claims**



1. In a digital data transmission system for communicating digital data over a plurality of individual transmission lines, the combination comprising:

transmitting means for transmitting digital data over at least first and second ones of said transmission lines, said transmitting means being operative for transmitting digital data over said first transmission line in a manner such that a first type of data is transmitted during first time periods and a second type of data is transmitted during second time periods occurring between said first time periods, and said transmitting means also being operative for transmitting a clock over said second transmission line concurrently with transmission of said first and second types of data over said first transmission line and in a manner such that said clock has a first repetition rate during said first time periods and a second repetition rate during said second time periods;

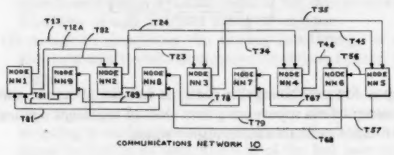
said transmitting means including shift register means having a plurality of data inputs, at least one data output, a clock input, and a plurality of control inputs, said first and second types of data being applied to said data inputs of said shift register means, said first transmission line being coupled to said data output of said register means, and said clock being coupled to said clock input of said shift register means;

said transmitting means also including transmitter logic means for providing control signals to the control inputs of said shift register means such that said shift register means is operative in response to said clock and control signals to cause said first and second types of data to be serially coupled via the shift register means data output to said first transmission line during respective first and second time periods.

4,271,511
COMMUNICATIONS NETWORK

Solomon Manber, Hoffstot La., Sands Point, N.Y. 11050, and George Klein, 159 Robby La., Manhasset Hills, N.Y. 11040

Filed Apr. 25, 1979, Ser. No. 33,162
Int. Cl.[3] G06F *11/20*
U.S. Cl. 371—8 7 Claims

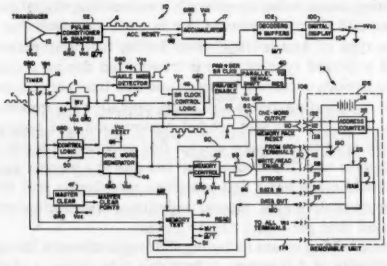


1. A communication network comprising a plurality of nodes, arranged along a looplike path, each of said nodes including a transmitting means for transmitting signals and two receiving means and a signalling means for transferring to the associated transmitting means one kind of signal when signals are received by both associated receiving means and another kind of signal when only one of the receiving means receives a signal, and means for connecting the transmitting means of each node to one of the receiving means of two different successive nodes, said connections being such that each node receives signals from two different nodes remote from it in one direction along the path and transmits signals to two different nodes remote from it in the opposite direction along the path.

4,271,512
INFORMATION COLLECTION AND STORAGE SYSTEM WITH MEMORY TEST CIRCUIT

Arlan J. Lyhus, 12416 Hooper Ct., Fulton, Md. 20759

Filed Mar. 30, 1979, Ser. No. 25,489
Int. Cl.[3] G01R *31/28*
U.S. Cl. 371—21 5 Claims

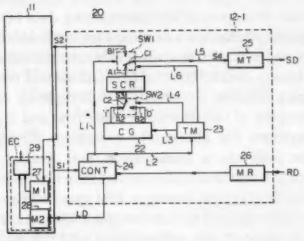


1. In an information recording system having means for supplying a plurality of serially occurring electrical pulses in which the number of said pulses is indicative of certain information, a memory storage unit having an integrated circuit memory containing a plurality of binary storage locations for storing binary data, an electrical circuit, and means providing for the detachable connection of said memory storage unit to said electrical circuit to enable said storage unit to be selectively connected to said circuit and also to be selectively disconnected from said electrical circuit and removed from said information recording system, said electrical circuit being connected to said pulse supplying means and including means for counting said pulses to obtain a pulse count and for writing into said memory binary data resulting from the pulse count, and said memory being capable of storing a pre-selected code before said storage unit is connected to said electrical circuit, the improvement comprising further means forming a part of said electrical circuit and connected to said memory when said unit is connected to said electrical circuit for interrogating the logic bit state in each of said storage locations to determine if the logic states conform to said pre-selected code, and means rendered effective by said interrogating means for signalling an operator of the information recording system whenever the logic state in any one of said storage locations fails to conform to said code.

4,271,513
METHOD AND APPARATUS FOR CARRYING OUT LOOPBACK TEST

Hiroshi Maejima, Fujimi; Noriaki Fujimura, Tokyo; Takahiro Shibuya, Tokyo, and Shigeyuki Akagi, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation; Fujitsu Limited; Oki Electric Industry Co., Ltd. and Nippon Electric Co., Ltd., all of Tokyo, Japan

Filed May 9, 1979, Ser. No. 37,383
Claims priority, application Japan, May 19, 1978, 53-598073
Int. Cl.[3] G06F *11/00*
U.S. Cl. 371—22 15 Claims



1. A method for carrying out a loopback test in a data communication system having a first data communication station, a second data communication station and a transmission path connected therebetween, comprising the steps of:

(a) generating, in order, a first pseudo-random noise signal, a loopback test signal, and a second pseudo-random noise signal in the first data communication station;

(b) transmitting, in order, said first pseudo-random noise signal, said loopback test signal, and said second pseudo-random noise signal from the first data communication station to the second data communication station by way of the transmission path;

(c) receiving, in order, said first pseudo-random noise signal, said loopback test signal, and said second pseudo-random noise signal, at the second data communication station;

(d) detecting the first pseudo-random noise signal at the second data communication station and creating a loopback signal transmission path therein;

(e) transmitting the loopback test signal from the second data communication station to the first data communication station by means of the loopback signal transmission path and the transmission path;

(f) receiving, at the first data communication station, the loopback test signal transmitted from the second data communication station, and comparing the received loopback test signal with the generated loopback test signal;

(g) detecting the second pseudo-random noise signal at the second data communication station, and deactivating the loopback signal transmission path, thereby finishing the loopback test.

4,271,514

LOOPBACK TEST FOR DATA TRANSMISSION PATHS

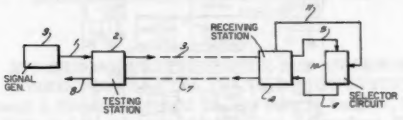
Karlheinz Parras, Nuremburg; Edgar Bader, Rückersdorf, and Helmut Dupont, Eckental, all of Fed. Rep. of Germany, assignors to Te Ka De, Felten & Guilleaume, Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 70,843

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838816

Int. Cl.³ H04L 1/14

U.S. Cl. 371—22 **2 Claims**



1. In combination with a data transmission path comprising a first and a second station, a first data transmission channel operative for synchronously transmitting data from the first to the second station in synchronism with a predetermined clocking schedule and at a respective first maximum data transmission rate, and a second data transmission channel for asynchronously transmitting data from the second to the first station at a respective second maximum data transmission rate, the first maximum data transmission rate being at least several times higher than the second maximum data transmission rate, a testing system which comprises: means applying to the first station a test waveform for transmission to the second station along said first data transmission channel, the test waveform presenting a data transmission rate at least approximately equal to said first maximum data transmission rate; loopback means at the second station connected to receive the test waveform and applying a return waveform to the second station for transmission to the first station along said second data transmission channel; the loopback means including selector circuit means having an input and an output, the selector circuit means receiving the test waveform at its input and being operative for transmitting to its output only every p-th waveform element of the test waveform, p being at least approximately equal to the ratio of said first to said second maximum data transmission rate, the shortest waveform-element duration of the waveform produced at the output of the selector circuit means at least approximately corresponding to said second maximum data transmission rate.

4,271,515

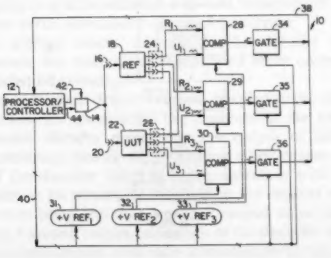
UNIVERSAL ANALOG AND DIGITAL TESTER

Clyde R. Axtell, III, Sunnyvale, and Richard B. Drabing, Santa Clara, both of Calif., assignors to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.

Filed Mar. 23, 1979, Ser. No. 23,370

Int. Cl.³ G01R 31/28; G06F 11/00

U.S. Cl. 371—25 **11 Claims**



1. For use in a comparison-type automatic electronic circuit test apparatus capable of generating stimulus signals having controlled parameters, a method for verifying that analog signals generated by a circuit in a device under test are within specified limits comprising the steps of repetitively:

providing a selected stimulus signal having controlled parameters to input terminals of a known good reference circuit unit and corresponding unknown circuit unit under test in order to stimulate synchronous operation of said reference circuit unit to produce a reference output signal and said circuit unit under test to produce an unknown output signal;

subtracting said reference output signal from said unknown output signal to produce an analog error signal representative of the amplitude difference between said reference output signal and said unknown output signal;

comparing said error signal against a limit window defined by an upper amplitude limit signal and a lower amplitude limit signal;

generating a digital level signal of a first state whenever said error signal is within said limit window in response to said stimulus signal and generating a digital level signal of a second state whenever said error signal is outside said limit window in response to said stimulus signal; and

selectively propagating said digital level signal to a digitally responsive apparatus in synchronism with said stimulus signal for indicating the failure of said unknown circuit unit.

4,271,516

AUTOMATIC TESTING OF ELECTRICAL CIRCUITRY

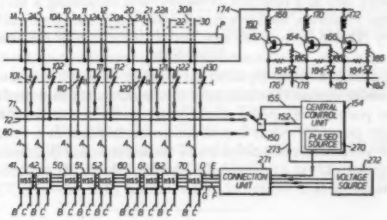
Anthony J. Smith, Penn, England, assignor to Racal Automation Limited, Berkshire, England

Filed Aug. 23, 1979, Ser. No. 69,043

Claims priority, application United Kingdom, Aug. 25, 1978, 34571/78

Int. Cl.³ G06F 11/00; G01R 15/12

U.S. Cl. 371—25 **12 Claims**



1. Apparatus for the automatic testing of electrical and electronic circuitry, comprising

a base member,

a plurality of contact means mounted in predetermined physical relationship with each other on the base member for making respective and simultaneous contact with predetermined terminals on a circuit to be tested,

a plurality of switching means each connected to a respective one of the contact means and being selectively operable to enable test signals to be applied to at least some predetermined ones of the terminals via the respective contact means and to enable a resultant output signal from at least one predetermined one of the terminals to be picked up by the respective contact means,

test circuit means connected to the switching means for simultaneously applying the test signals to the predetermined ones of the terminals via the selectively operated switching means for a predetermined length of time which is insufficient in relation to the magnitude of the test signals to cause damage to other circuits which may be connected to the terminals of the circuit under test, and

means connected to the switching means for monitoring the

or each resultant output signal to determine whether the circuit under test is operating correctly or not.

4,271,517

CIRCUIT ARRANGEMENT FOR THE FORMATION OF CHECK BITS FOR BINARY DATA

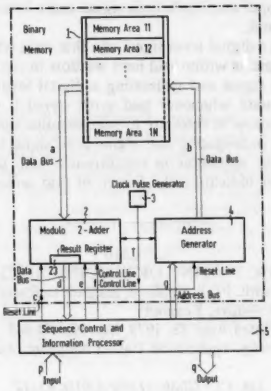
Karl-Heinz Krauss, Planegg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,029

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758952

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—37 **4 Claims**



1. A circuit arrangement for the formation of check bits for binary data comprising, apparatus for forming a number of check bits as a function of binary data indicating a plurality of digit positions, used in a linear code, comprising a binary memory (**1**) which receives and stores for each digit position of the binary data, an allocated check digit position word which has a position number equal to the number of check bits, a modulo-2-adder circuit (**2**) connected to the output of said memory for the purpose of adding check digit position words, the check digit position words are added to each other as a function of the state of the allocated bit of the binary data (k), and a result register (**23**) in said modulo-2-adder circuit (**2**) containing the output of said modulo-2-adder circuit (**2**).

4,271,518

DATA TRANSMISSION/RECEPTION INSTALLATION WITH PARALLEL/SERIAL AND SERIAL/PARALLEL CHARACTER CONVERSION FOR DATA EXCHANGE BETWEEN COMMUNICATING DATA PROCESSING SYSTEMS

Paul Birzele, and Gerhard Geitz, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

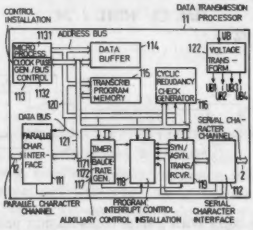
Filed Mar. 23, 1979, Ser. No. 23,306

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813383

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—37 **6 Claims**

1. A data transmission/reception installation with parallel/-serial and serial/parallel character conversion for data exchange with an external data processing system comprising: a data transmission processor means for parallel/serial and serial/parallel character conversion arranged with an internal data processing installation within a data processing system, said data transmission processor means being connected between said internal data processing installation and a data modem means terminating a data line for controlling data transmission and/or reception procedure; said data transmission processor means having at least one microprocessor connecting by an address bus to a transcribable program memory, and a cyclic redundancy check generator means connected by a data bus to the transcribable program memory for monitoring a data transmission and/or reception according to a stored test program; a data buffer means having a memory with random access connected by the address bus to the microprocessor for intercepting data back-ups occurring upon data transmission and/or reception; and a timer means connected to the data bus and program interrupt control for generation of procedure supervision times, and a baud-rate generator means connected to the timer means for adjustment of a respectively optimum transmission speed by means of said timer means.



4,271,519

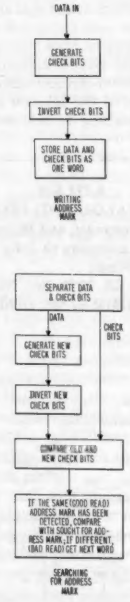
ADDRESS MARK GENERATION AND DECODING METHOD

James B. Hall, Louisville, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Jul. 26, 1979, Ser. No. 61,028

Int. Cl.³ G06F *11/10, 13/00*

U.S. Cl. 371—38 **12 Claims**


DATA IN
GENERATE CHECK BITS
INVERT CHECK BITS
STORE DATA AND CHECK BITS AS ONE WORD
WRITING ADDRESS MARK
SEPARATE DATA & CHECK BITS
DATA
CHECK BITS
GENERATE NEW CHECK BITS
INVERT NEW CHECK BITS
COMPARE OLD AND NEW CHECK BITS
IF THE SAME(GOOD READ) ADDRESS MARK HAS BEEN DETECTED, COMPARE WITH SOUGHT FOR ADDRESS MARK. IF DIFFERENT, (BAD READ) GET NEXT WORD
SEARCHING FOR ADDRESS MARK

7. Method for generating and detecting an address mark for indicating an end of a data record comprising words,

wherein said method for generating an address mark comprises the step of:

during the writing of a record onto a storage medium, performing a reversible operation on preselected bits of at least one word of said record to generate an address mark and

wherein said method for detecting said mark comprises the steps of:

reading each word of a record, performing the reverse of said operation on each word of said record and providing an error signal at all times during the reading of said record except when said address mark is read.

4,271,520

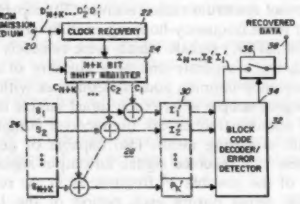
SYNCHRONIZING TECHNIQUE FOR AN ERROR CORRECTING DIGITAL TRANSMISSION SYSTEM

Daniel J. Coombes, Winfield, Ill., and John H. Sangster, Short Hills, N.J., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1979, Ser. No. 51,938

Int. Cl.³ G06F *11/10*; H04L *7/02*

U.S. Cl. 371—42 **8 Claims**



1. In a digital communication system for the transmission and reception of a data bit stream, the improvement comprising:

an encoder for processing said data bit stream, said encoder comprising:

error correction encoder means for receiving said data bit stream and producing an error correctable encoded bit stream corresponding thereto;

encoder storage means having a predetermined sequence of sync bits stored therein, said sync bit sequence being selected to optimize, at the decoder site, detection of an out of sync condition; and

encoder combining means for predeterminedly combining said encoded bit stream with said sync bit sequence to thereby produce a transmission bit stream; and

a decoder for processing said transmission bit stream comprising:

decoder storage means having said predetermined sync bit sequence stored therein;

decoder combining means for predeterminedly combining said transmission bit stream with said sync bit sequence thereby regenerating, for the condition of the decoder being in synchronization with said transmission bit stream, said error correctable encoded bit stream;

data storage means, coupled to the decoder combining means, for storing the regenerated error correctable encoded bit stream;

error correction detector means, coupled to the data storage means, for monitoring the contents of the data storage means, thereby monitoring the output of said decoder combining means, and producing a first output, indicative of the decoder being in synchronization with said transmission bit stream, in response to the number of detected errors being less than a predetermined value and producing a second output, indicative of the decoder being out of synchronization with said transmission bit stream, in response to the number of detected errors being greater than or equal to said predetermined value.

4,271,521

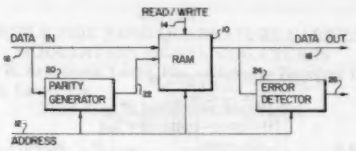
ADDRESS PARITY CHECK SYSTEM

Kamal A. Mahmood, El Paso, Tex., assignor to The Anaconda Company, Greenwich, Conn.

Filed Jul. 9, 1979, Ser. No. 55,631

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—51 **5 Claims**



1. A method for detecting errors occurring in the process of writing data words into selected memory locations and reading data from said memory locations comprising;

assigning a parity to each memory location as a function of memory address,

receiving a data word for storing in a preselected memory location,

generating a parity bit for said data word as a function of the parity of said data word and the parity assigned to the preselected memory location,

storing said data word and said parity bit in said preselected memory location,

reading said data word and parity bit stored in said preselected memory location,

detecting the parity of said data word and parity bit, and

comparing the detected parity to the parity assigned to said memory location to determine if an error has been made in either addressing said location or in transferring data.

4,271,522

METHOD OF AND APPARATUS FOR DETERMINING ERRORS READ FROM A MAGNETIC RECORDING MEDIUM

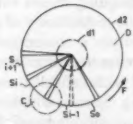
M. Jacques Droux, Montfermeil, France, and Claude R. Cardot, Lexington, Mass., assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

Filed May 25, 1979, Ser. No. 42,299

Claims priority, application France, May 26, 1978, 78 15764

Int. Cl.³ G06F *11/30*

U.S. Cl. 371—57 **30 Claims**

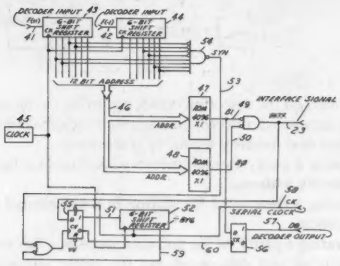


1. A method of determining errors in signals derived from cells of a reference zone read by a transducer for a magnetic recording medium, the transducer normally producing a waveform that exceeds a threshold value in a particular direction only once during each cell, comprising determining whether the waveform derived by the transducer exceeds a threshold determined by the threshold value at an incorrect time during a cell of the reference zone.

4,271,523
CONTENTION INTERFERENCE DETECTION IN DATA COMMUNICATION RECEIVER

Melvin G. Gable, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1979, Ser. No. 46,579
Int. Cl.[3] H04Q 9/00
U.S. Cl. 371—57 5 Claims



1. A synchronous digital data communication receiver adapted to be connected to a communication medium shared by a plurality of other synchronous data communication receivers, said communication receiver having inputs for receiving a plurality of input signals representing input states, each input state being encoded with code redundancy into a unique one of a plurality of canonical forms transmitted over said communication medium, said digital data receiver comprising:

a first coupling means for providing an interfacing connection between said communication medium and said communication receiver;

a clock means for providing a train of pulses having a predetermined spacing;

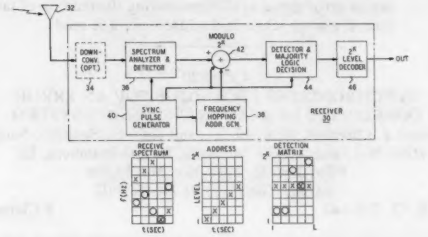
a decoding means coupled to said clock means and said first coupling means for extracting signal information from input signals from said communication medium and providing a decoded output in one of a plurality of output states corresponding to said input states and classifying signals not of canonical form into one of the plurality of output states, such that said one of the plurality of output states has a minimum coding distance between the canonical forms and said input signals and said classified input signals represent an error of a correctible form, the number of said output states being equal to the number of said input states, said decoding means extracting signal information from the code redundancy of said input signals and generating as an output a contention interference detection signal, said contention interference detection signal being derived from unclassifiable ones of said input signals which have a coding distance which is equidistant from all canonical forms, and said unclassifiable input signals represent an error of a noncorrectable form, said decoding means including a means for detecting the presence of an error of a noncorrectible form, and said decoding means including a means for generating a signal identifying contention interference upon detection of an error of a noncorrectable form; and

a second coupling means coupled to said decoding means for providing an interfacing buffer connection between said decoding means and a device using information received by said communication receiver.

4,271,524
SPREAD SPECTRUM FH-MFSK RECEIVER

David J. Goodman, Aberdeen Township, Monmouth County; Paul S. Henry, and Vasant K. Prabhu, both of Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1980, Ser. No. 124,564
Int. Cl.[3] H04J 6/00; H04B 15/00
U.S. Cl. 375—1 7 Claims



1. A spread spectrum radio receiver (30) capable of receiving one or more frequency-hopping, multilevel frequency shift keyed (FH-MFSK) signals which were remotely transmitted by modulating a separate one of a plurality of different L-length frequency-hopping address sequences with each user's separate signal sample where each signal sample is encoded as one of 2^K possible frequencies; the receiver comprising:

spectrum analyzing means (36) capable of generating, in reponse to a received signal, an output signal indicating each of the possible 2^K frequencies in the received FH-MFSK signal during each period of the L-length sequence;

frequency-hopping address generating means (38) capable of generating an L-length frequency-hopping address sequence associated with a particular user in synchronism with the received L-length signal;

means (42) capable of demodulating the output signal from the spectrum analyzing means with the address sequence from the frequency-hopping address generating means to generate a set of signals forming a 2^K level by L-length detection matrix of received demodulated message signals

CHARACTERIZED IN THAT

the receiver further comprises:

majority logic determination means (44, 46) capable of determining which of the 2^K levels of the matrix generated by the demodulating means have a maximum value for the decoded message signals and for generating an output signal representative of the originally encoded message signal indicated by one of such 2^K determined maximum value levels under conditions where the determined maximum value is equal to or less than a predetermined absolute value and one or more of such maximum value levels have been found.

4,271,525
ADAPTIVE DIVERSITY RECEIVER FOR DIGITAL COMMUNICATIONS

Kojiro Watanabe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1980, Ser. No. 121,771
Claims priority, application Japan, Feb. 21, 1979, 54-19367
Int. Cl.[3] H04L 1/02; H04B 1/12
U.S. Cl. 375—14 5 Claims

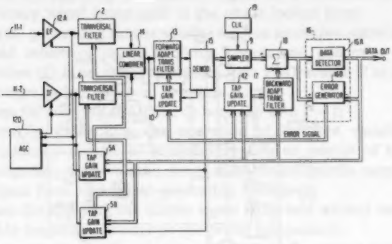
1. An adaptive diversity receiver for digital communication for processing transmitted data signals received in a plurality of diversity channels to minimize interference caused between symbols constituting said data signals, said receiver comprising:

a plurality of transversal filters for receiving said data sig-

nals, each of said transversal filters having tap gains, and each of said transversal filters corresponding to one of said diversity channels;

means for linearly combining the outputs of said transversal filters to provide a combined output;

a decision feedback equalizer having tap gains, said equalizer minimizing said interference and responsive to said combined output to provide an equalized output;



means responsive to said equalized output for producing detected data representing an estimated value of said transmitted data;

means for updating said tap gains of said transversal filters, responsive to said detected data and said data signals from said diversity channels so as to provide an adaptive matched filter for each of said diversity channels; and

means responsive to said detected data and said equalized output of said decision feedback equalizer, for updating said tap gains of said decision feedback equalizer.

4,271,526

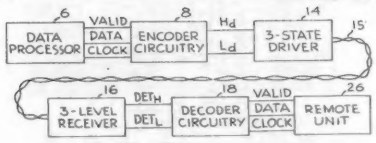
THREE-LEVEL, SELF-CLOCKED DATA TRANSMISSION SYSTEM

Laurence P. Flora, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 16,976, Mar. 2, 1979. This application Jun. 5, 1979, Ser. No. 45,805

Int. Cl.³ H04L *25/40, 3/00*

U.S. Cl. 375—17 **8 Claims**



1. A self-clocked three-level digital data transmission system comprising:

encoding means responsive to input binary signals and an applied clock signal for encoding said input binary signals into a three-level signal having first and second levels and an intermediate level and having level transitions occurring at times determined by said clock signal;

said encoding means being operable to encode pairs of input binary signals into corresponding encoded pairs of sequential levels in a manner such that at least one encoded input pair is selectably encodable into either a first pair of sequential levels having a positive average value relative to said intermediate level or into a second pair of sequential levels having a negative average value relative to said intermediate level, said encoding means being operable to select said first or second pair in a manner so as to seek a predetermined average level for the encoded three-level signal relative to said intermediate level;

a transmission line;

driving means for coupling the encoded three-level signal to one end of said transmission line for transmission thereby; and

receiving and decoding means coupled to the other end of said transmission line for receiving the transmitted three-level signal, deriving said clock signal therefrom, and employing the derived clock signal for decoding the received three-level signal into binary form.

4,271,527

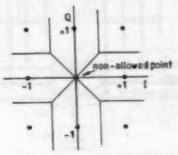
DOUBLE SIDE BAND-QUADRATURE CARRIER MODULATION SIGNAL STRUCTURES

Thomas R. Armstrong, Largo, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Aug. 31, 1979, Ser. No. 71,734

Int. Cl.³ H04L *3/00*

U.S. Cl. 375—39 **5 Claims**



3×3 Constellation Decision Regions

1. A method for mapping in the complex plane the point constellation of a double side band-quadrature carrier modulation system wherein each symbol conveys M bits (M being an integer) of information comprising the steps of:

a. Mapping the points in a constellation composed of N×N points (N being an integer) having 90° symmetry about the origin;

b. Omitting any point appearing at the origin;

c. Omitting any points in excess of 2^M; and

d. Relocating the point in each quadrant further spaced from the origin than any other point to a point closer to the origin than it previously occupied.

4,271,528

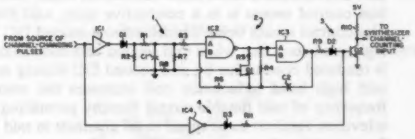
VARIABLE PULSE TUNING SYSTEM

Timothy W. Brown, Williamsville, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 17, 1979, Ser. No. 76,018

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—179 **15 Claims**



1. In a tuning system including a source of channel-changing pulses for operating a channel-selecting device, a variable pulse rate tuning circuit comprising:

single pulsing means having an input coupled to the channel-changing pulses for developing a single stepping pulse in response to individual channel-changing pulses,

pulse adding means having an input coupled to the channel changing pulses for selectively developing at least an additional stepping pulse in response to a prescribed channel-changing condition, and

a stepping pulse combining circuit having an output coupled to the channel-selecting device, an input coupled to the output of the single pulsing means, and an input coupled to the output of the pulse adding means whereby the channel

selecting device incrementally changes channels in response to the stepping pulse.

4,271,529

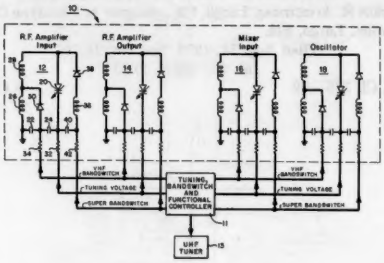
TUNABLE RESONANT CIRCUITS FOR A MULTI-BAND VHF/UHF/CATV TUNER

Peter Strammello, Jr., Arlington Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 20, 1980, Ser. No. 132,348

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—180 **7 Claims**



1. In a tuner for tuning a television receiver to any one of several channels in a plurality of frequency bands, each of said frequency bands having a maximum and minimum frequency, a plurality of tunable resonant circuits, each of said tunable reasonant circuits comprising:

low frequency band inductance coil means;

medium frequency band inductance coil means, said medium band inductance coil means connected serially to said low band inductance coil means through a node;

a voltage controlled variable reactance device, said variable reactance device coupled in parallel across said low and medium frequency band inductance coil means and coupled to a variable voltage source;

first bias control means coupled between said node and a first DC biasing means for tuning to said medium band when said first bias control means is rendered conducting and for tuning to said low band when said first bias control means is rendered nonconducting by said first DC biasing means;

high frequency band inductance coil means; and

second bias control means connected serially to said high band inductance coil means and, in combination with said high band inductance coil means, coupled in parallel across said variable reactance device in combination with said medium band inductance coil means when said first bias control means is in a conductive state, said second bias control means being connected to a second DC biasing means such that when said second bias control means is rendered conductive by said second DC biasing means said high band inductance coil increases the resonant frequency of said tunable circuit thereby permitting said television receiver to be tuned to all channels in said high frequency band.

4,271,530

RECEIVER HAVING A FREQUENCY SYNTHESIZING CIRCUIT

Theodorus H. M. van Deursen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

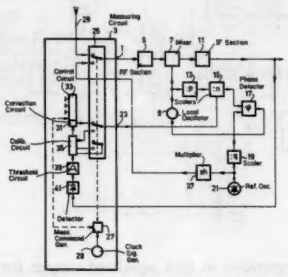
Filed Sep. 12, 1978, Ser. No. 941,370

Claims priority, application Netherlands, Oct. 26, 1977, 7711714

Int. Cl.³ H04B *1/26;* H03J *7/02*

U.S. Cl. 455—182 **3 Claims**

1. A receiver having a radio-frequency section, an intermediate section and a frequency synthesising circuit comprising both a reference oscillator and a local oscillator for tuning said receiver to one of several transmitter frequencies for reception thereof, the local oscillator being tunable, independently from the frequency of a received signal, to a frequency, determined by a tuning datum, which deviates the intermediate frequency from a frequency value corresponding to the frequency of a transmitter to be received, wherein the receiver comprises a measuring circuit having means for applying a measuring signal, instead of a signal to be received, to an input of the



radio-frequency section of the receiver, means for changing the frequency of the local oscillator signal independently from the frequency of the signal to be received and means for measuring the center frequency at the output of the intermediate-frequency section, the receiver furthermore comprising a correction circuit for processing the measured frequency, to which the intermediate-frequency section is tuned, into the tuning datum for the frequency synthesising circuit.

4,271,531

FREQUENCY SYNTHESIZER

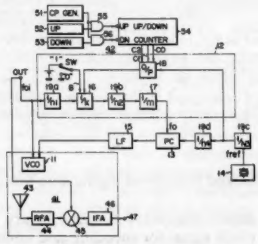
Ken-Ichi Torii, Yokohama, and Takeshi Shima, Sagamihara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 15, 1979, Ser. No. 48,984

Claims priority, application Japan, Jun. 19, 1978, 53/73874

Int. Cl.³ H04B *1/16;* H03L *7/18*

U.S. Cl. 455—182 **7 Claims**



6. A tuner for a television receiver comprising:

a frequency synthesizer for synthesizing frequencies with a phase-locked loop in which the frequency of the output signal from a voltage controlled oscillator is applied to a variable frequency dividing circuit and is divided thereby and the output signals from the variable frequency dividing circuit and a reference frequency oscillator are applied to a phase comparator and the output signal corresponding to the result of the phase comparison is fed back to the voltage controlled oscillator, wherein

said variable frequency dividing circuit is comprised of:

a first variable frequency divider for frequency-dividing the frequency of the output signal from the voltage controlled

oscillator into a 1/K−1, 1/K or 1/K+1 frequency (K is a fixed integer);

means for designating one of frequency division ratios (K−1, K, K+1) of the first variable frequency divider;

a second variable frequency divider for further frequency dividing the frequency of the output signal from the first variable frequency divider into a 1/m frequency (m is a variable integer);

means for applying a frequency signal as a reference frequency signal being used in the phase locked loop;

a signal generating means which receives an output signal of said reference signal applying means and generates Q pulses (Q is an integer between 0 to P−1 where P is an integer) when received P pulses;

means for varying the value Q between 0 to P−1;

means for controlling the operation of the first variable frequency divider in accordance with an output of the frequency division ratio designation means and the output signal from said signal generating means;

means for applying the output signal from said second variable frequency divider to the phase comparator;

a tuner portion for forming an intermediate frequency signal by using the output frequency signal from said frequency synthesizer as a local oscillation frequency signal of the television receiver; and

means for supplying a control signal to said signal generating means in order to finely adjust the frequency of the output signal from said frequency synthesizer.

4,271,532

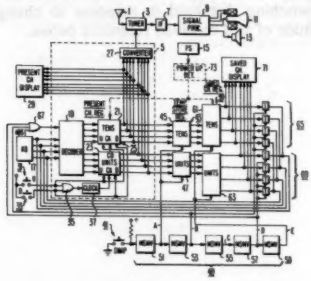
RECEIVER WITH A CHANNEL SWAPPING APPARATUS

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,229

Int. Cl.³ H04B 1/26

U.S. Cl. 455—186 **6 Claims**



1. In a receiver, tuning apparatus responsive to a tuning signal for tuning said receiver to channels selected by a user in response to a tuning signal, comprising:

channel selection means for generating groups of encoded binary signals corresponding to respective selected channels, said channel selection means including present channel register means for storing the encoded binary signals corresponding to a presently selected channel;

conversion means for converting binary signals stored in said present channel register means into said tuning signal for tuning said receiver to a selected channel;

saved channel register means for storing binary signals corresponding to a previously selected channel;

swap function means for generating a swap signal only when operated by a user;

transfer means for exchanging the contents of said present channel register means and said saved channel register means only in response to said swap signal whereby the contents of said saved channel register are not affected when a new channel is selected.

4,271,533

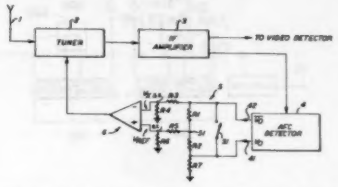
AFC INTERFACE CIRCUIT

Wilfred L. Hand, Clarence, and Victor J. Jacek, Leroy, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 56,569, Jul. 11, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,198

Int. Cl.³ H04B 1/16

U.S. Cl. 455—192 **10 Claims**



1. An AFC interface circuit coupled to first and second differential outputs of a differential AFC detector, said circuit having an AFC reference output and an AFC control output, said outputs coupled to a tuning means, the circuit comprising:

bridging means coupled between the first and second differential outputs for providing at its output a substantially unchanging signal,

referencing means coupled between the output of the bridging means and the AFC reference output for providing an appropriate AFC reference signal at the AFC reference output, and

dividing means coupled between the first differential output and the AFC control output for providing an appropriate AFC control signal at the AFC control output.

4,271,534

MICROWAVE RECEIVER

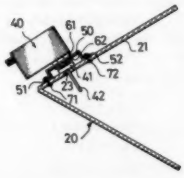
Akira Takayama, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,154

Claims priority, application Japan, Sep. 22, 1978, 53-130609[U]

Int. Cl.³ H04B 1/06

U.S. Cl. 455—270 **4 Claims**



1. A microwave receiver having an antenna constituted by a reflector and a primary radiator, and a converter provided with an unbalanced input terminal for receiving the signal from said antenna, wherein the improvement comprises a conductor extending from said unbalanced input terminal of said converter into said reflector of said antenna, so as to constitute said primary radiator of said antenna.

4,271,535

NOISE ELIMINATING SYSTEM

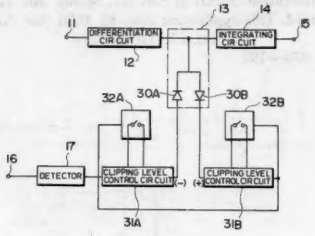
Hiroshige Fukuhara, and Norio Fujiki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 21, 1979, Ser. No. 68,482

Claims priority, application Japan, Aug. 31, 1978, 53-118488[U]; Nov. 17, 1978, 53-157395[U]

Int. Cl.³ H04B *15/00, 1/10*

U.S. Cl. 455—309 **4 Claims**



1. A noise eliminating system for use in a radio receiver for receiving an electric field, comprising:

a detector circuit for detecting the strength of the received electric field and developing a signal corresponding thereto;

a differentiation circuit for differentiating said detector signal;

a clipper circuit for limiting the amplitude of an output signal from said differentiation circuit below a clipping level;

a selector circuit for selecting one of a plurality of different constants in accordance with the strength of the received electric field;

a control circuit for varying the clipping level in proportion to the product of the selected constant and the strength of the received electric field; and

an integrating circuit for integrating an output signal from said clipper circuit.

4,271,536

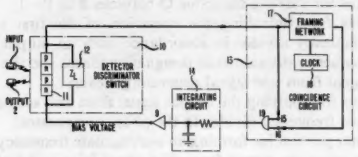
DISCRIMINATOR THRESHOLD LEVEL CONTROL CIRCUIT FOR A DIGITAL TRANSMISSION SYSTEM

John A. Copeland, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 30, 1978, Ser. No. 956,059

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—619 **2 Claims**



1. In a digital communication system in which there is transmitted, along with the data pulses, reference pulses whose amplitude is intermediate that of the data "0" and "1" pulses, a receiver comprising:

a detector-discriminator circuit including a switch **(11)** having a switching threshold level that is variable as a function of the bias applied thereto;

characterized in that said receiver further includes:

means **(13)** for gating out reference pulses received at said receiver and detected by said switch **(11)**; and

means **(14)** for averaging said gated reference pulses over a prescribed period of time to produce a feedback signal for changing the bias applied to said switch so as to change the switching threshold in response to changes in the amplitude of said received reference pulses.

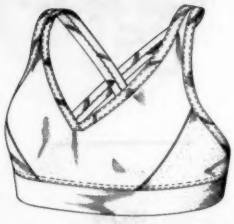
DESIGN PATENTS

GRANTED JUN. 2, 1981

ERRATA

For CLASS	See PATENT NO.
D99–044	259,400

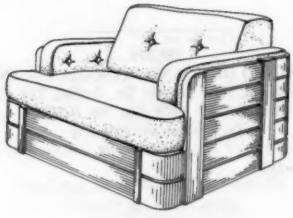
259,370
BRASSIERE
Hinda S. Schreiber; Eugenie Z. Lindahl, both of Burlington, Vt., and Polly P. Smith, New York, N.Y., assignors to Jogbra, Inc., Burlington, Vt.
Filed Dec. 12, 1978, Ser. No. 970,130
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



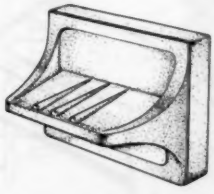
259,371
CANE
Lawrence O. Boehm, 2002 Lowery St., Poplar Bluff, Mo. 63901
Filed Sep. 6, 1978, Ser. No. 940,580
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—7

259,372
GOLF SHOE TOOL
George Cepin, 3369 Quentin Dr., Youngstown, Ohio 44511
Filed Dec. 29, 1978, Ser. No. 974,628
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—06

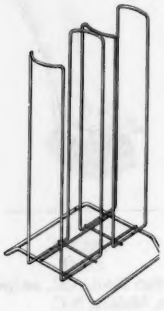
259,373
SEAT
Richard G. Brown, High Point, N.C., assignor to Null Manufacturing Corporation, Maiden, N.C.
Filed Apr. 16, 1979, Ser. No. 30,134
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



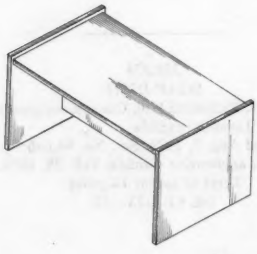
259,374
SOAP DISH
Douglas M. Crowe, Richmond Hill, Canada, assignor to Smith & Stone Limited, Toronto, Canada
Filed Aug. 7, 1979, Ser. No. 64,636
Claims priority, application Canada, Feb. 20, 1979, 202079
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90

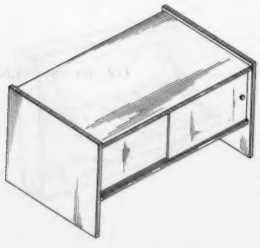


259,375
RACK FOR HOLDING DISPOSABLE CUPS AND LIDS THEREFOR
Conrad D. Mastrud, Jr., 2921 Sheridan Rd., Evanston, Ill. 60202, and Jon D. Poulos, 1651 Mount Pleasant, Northfield, Ill. 60093
Filed Nov. 5, 1979, Ser. No. 91,479
Term of patent 14 years
Int. Cl. D6—*04;* D7—*06*
U.S. Cl. D6—157

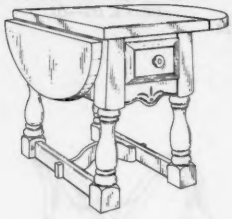


259,376
COMBINED DESK AND STORAGE CABINET
Joseph T. Verdesca, 5604 Lobello Dr., Dallas, Tex. 75229
Filed Jul. 17, 1978, Ser. No. 925,319
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—168

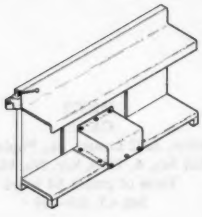




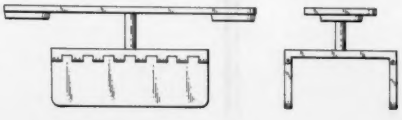
259,377
EXTENSIBLE END TABLE
Melbourne F. Smith, Jr., Hickory, N.C., assignor to Broyhill Furniture Industries, Inc., Lenoir, N.C.
Filed Oct. 12, 1978, Ser. No. 950,705
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



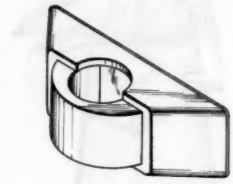
259,378
DRAPERY WORK TABLE
Frances Amaro, and Max Amaro, both of 1129 Lorna Dr., El Cajon, Calif. 92020
Filed Apr. 30, 1979, Ser. No. 34,456
Term of patent 14 years
Int. Cl. D06—*03*
U.S. Cl. D6—179

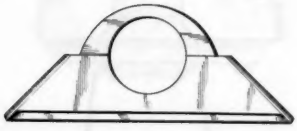


259,379
PORTABLE GLASS HOLDER FOR ATTACHMENT TO A FURNITURE ARM
Gladys Eisenstat, 47 Arch La., Hicksville, N.Y. 11801
Filed Oct. 10, 1978, Ser. No. 950,222
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



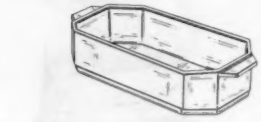
259,380
CORNER STRUCTURE FOR SHELVING
John H. Welsch, Moscow, and Charles W. Nicely, Dallas, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.
Filed Apr. 4, 1979, Ser. No. 26,926
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—191



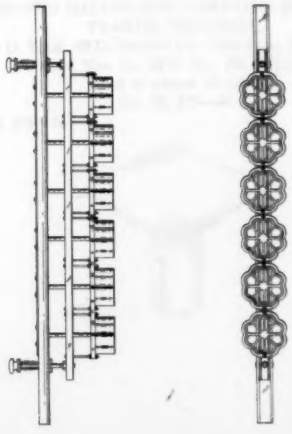


259,381
PILLOW OR THE LIKE
Robert F. Smith, 3210 Winter St., Fort Wayne, Ind. 46806
Filed Oct. 3, 1977, Ser. No. 839,107
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—200

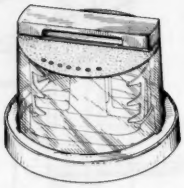
259,382
PAN
David L. Painter, Glenview, Ill., and Robert C. Zinkgraf, West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 8, 1979, Ser. No. 18,809
The portion of the term of this patent subsequent to Sep. 2, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—21

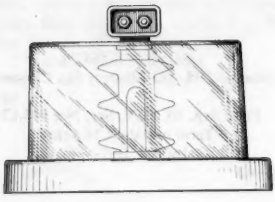


259,383
ROSETTE IRON
Michael J. Sommerfeld, 1126 Dennis St., Chippewa Falls, Wis. 54729
Filed Sep. 20, 1978, Ser. No. 945,176
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43

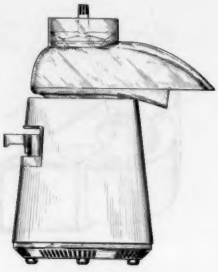


259,384
ELECTRIC FRANKFURTER COOKER
Monte L. Levin, New York, N.Y., assignor to Scovill Inc., Waterbury, Conn.
Filed May 30, 1978, Ser. No. 910,375
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—85

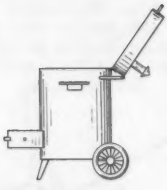




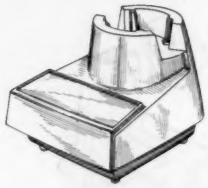
259,385
ELECTRIC CORN POPPER
Monte L. Levin, New York, N.Y., assignor to Scovill Inc., Waterbury, Conn.
Filed May 14, 1979, Ser. No. 38,544
Term of patent 14 years
Int. Cl. D7—*02*; D15—*08*
U.S. Cl. D7—94

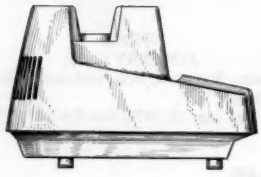


259,386
COMBINED BARBEQUE AND SMOKER
Kenneth W. Mulder, 4707 Cherokee Rd., Tampa, Fla. 33609
Filed Sep. 18, 1978, Ser. No. 943,539
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108



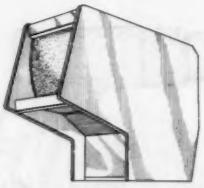
259,387
KITCHEN BLENDER BASE
Monte L. Levin, New York, N.Y., assignor to Scovill Inc., Waterbury, Conn.
Filed Jun. 21, 1979, Ser. No. 50,765
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—154



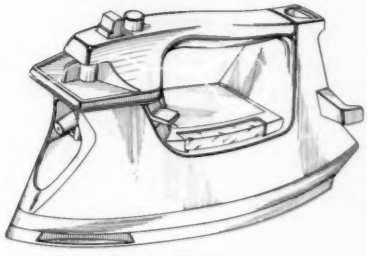


259,388
FLOOR SWEEPER
Elio Merloni, Milan, Italy, assignor to Emer S.n.c., Milan, Italy
Filed Jan. 18, 1978, Ser. No. 870,495
Claims priority, application United Kingdom, Jul. 7, 1977, 980687/77
Term of patent 14 years
Int. Cl. D7—*05;* D15—*05*
U.S. Cl. D7—175

259,389
FEED HOOD FOR A GRANULATOR AND THE LIKE
Richard J. Robbins, Derby, and Robert W. Fee, Wichita, both of Kans., assignors to Leesona Corp., Warwick, R.I.
Filed Dec. 11, 1978, Ser. No. 968,573
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194

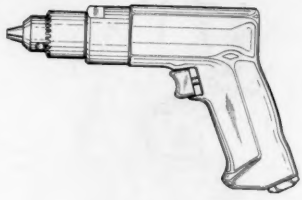


259,390
IRON OR SIMILAR ARTICLE
John C. Shaivoy, Fairfield, Conn., assignor to General Electric Company, New York, N.Y.
Filed Nov. 1, 1978, Ser. No. 956,734
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—202

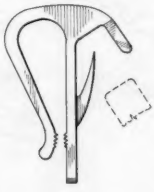


259,391
COMBINED MIXING AND CARRYING BOARD FOR PLASTIC MATERIAL
Jimmie D. Scott, 6923 Barchel Cir., Harrison, Tenn. 37341
Filed Nov. 16, 1978, Ser. No. 961,145
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

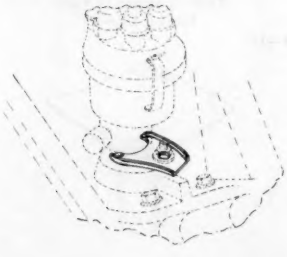
259,392
PNEUMATIC DRILL
Heino Elmessaar; Ronald J. Lundberg, and Stig R. Zernell, all of Stockholm, Sweden, assignors to Atlas Copco AB, Nacka, Sweden
Filed Jul. 18, 1977, Ser. No. 816,888
Claims priority, application Sweden, May 18, 1977, 770106
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—68



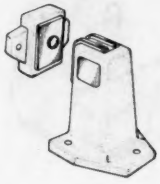
259,393
SUPPORT CLIP FOR A LOUVER OR THE LIKE
Ago Kuru, 62 Roborough Ave., Mt. Eliza, 3930, Victoria, Australia
Filed Jul. 13, 1978, Ser. No. 924,217
Claims priority, application Australia, May 15, 1978, 74746
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—388



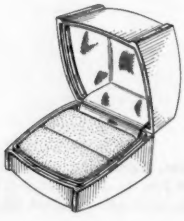
259,394
DISTRIBUTOR CLAMP
Richard J. Smith, Middleburgh Hts., Ohio, assignor to W. R. Grace & Co., New York, N.Y.
Filed Aug. 7, 1978, Ser. No. 931,410
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—394



259,395
COMBINED MAGNETIC DOOR STOP AND STRIKING PLATE
Michio Sugasawara, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan
Filed Nov. 27, 1978, Ser. No. 963,785
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—402

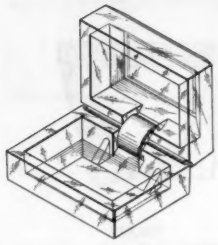


259,396
JEWELRY CASE
Jerome Shiffman, Scarsdale, N.Y., assignor to Rocket Jewelry Box, Inc., Bronx, N.Y.
Filed Sep. 20, 1978, Ser. No. 943,952
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—420

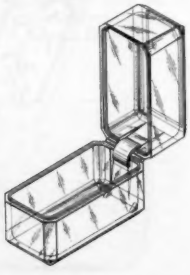


259,397
SQUEEZE DISPENSER
Gertrude Y. Kerns, 28820 Grant St., Clair Shores, Mich. 48081
Filed Nov. 4, 1977, Ser. No. 848,452
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—352

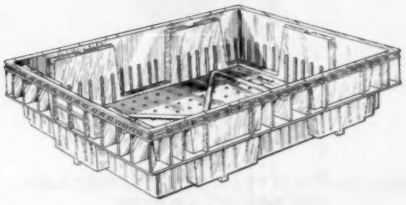
259,398
JEWELRY CASE
Jerome Shiffman, Scarsdale, N.Y., assignor to Rocket Jewelry Box, Inc., Bronx, N.Y.
Filed Sep. 20, 1978, Ser. No. 943,951
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—423



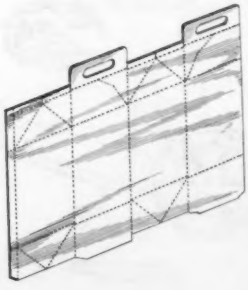
259,399
JEWELRY CASE
Jerome Shiffman, Scarsdale, N.Y., assignor to Rocket Jewelry Box, Inc., Bronx, N.Y.
Filed Sep. 20, 1978, Ser. No. 943,953
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—423



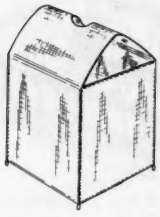
259,400
TOTE BOX FOR FRUIT OR THE LIKE
James C. Carroll; Victor D. Johns, and Lewis T. Johnson, all of Hopkinsville, Ky., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 21, 1978, Ser. No. 879,569
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D99—44



259,401
CARTON BLANK
James F. Manning, Strongsville, Ohio, assignor to Champion International Corporation, Stamford, Conn.
Filed Oct. 27, 1978, Ser. No. 955,513
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432

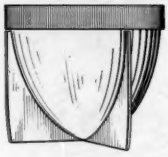


259,402
CONTAINER FOR BULK MATERIALS
Frank Nattrass, Knaresborough, England, assignor to Lolift Limited, England
Filed Sep. 8, 1977, Ser. No. 831,695
Claims priority, application United Kingdom, Mar. 22, 1977, 979346/77
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—432

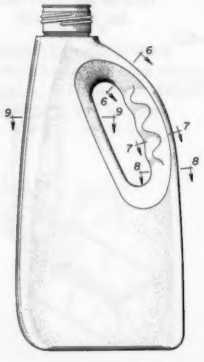


259,403
CONTAINER LID WITH NONREMOVABLE TAB CLOSURE FOR DRINK OPENING
Eddie B. Frazier, Jr., P.O. Box 1272 B, Rockville, Md. 20850
Filed Nov. 9, 1978, Ser. No. 959,398
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—438

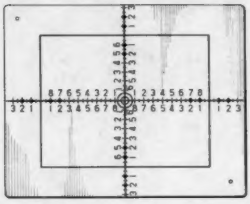
259,404
CONTAINER
Ian B. Jones, Knaresborough, England, assignor to Belzona Molecular Metalife Limited, North Yorkshire, England
Filed Aug. 14, 1978, Ser. No. 933,773
Claims priority, application United Kingdom, Jul. 31, 1978, 985,706/78
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370



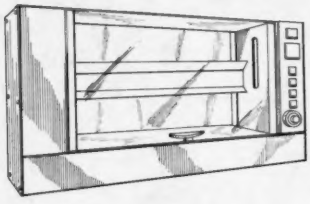
259,405
BOTTLE
Archie G. Drummond, Palatine, Ill., assignor to The Clorox Company, Oakland, Calif.
Filed Nov. 27, 1978, Ser. No. 963,930
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—376



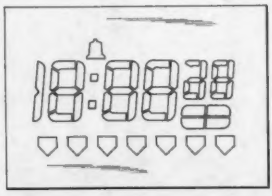
259,406
COLLIMATOR TEST TARGET
Donald R. Jacobson, Middleton, Wis., assignor to Radiation Measurements, Inc., Middleton, Wis.
Filed Dec. 20, 1978, Ser. No. 971,422
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



259,407
CORROSION TESTING INSTRUMENT
Danny A. Pierce, Columbus, Ohio, assignor to IPM Corporation, Columbus, Ohio
Filed Dec. 11, 1978, Ser. No. 968,055
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81

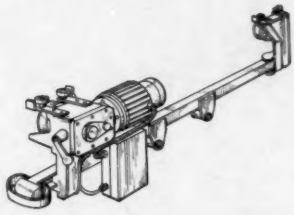


259,408
ELECTRO-OPTIC DISPLAY FOR A TIMEPIECE WITH ALARM
Philip R. Wright, San Jose, and James J. Halicho, Sunnyvale, both of Calif., assignors to Timex Corporation, Waterbury, Conn.
Filed Apr. 12, 1979, Ser. No. 29,186
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125



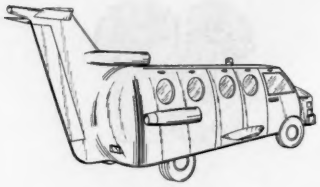
259,409
FIGURINE OF A PEKINGESE
Jesús A. C. Santa Eulalia, and Javier B. C. Santa Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Irvine, Calif.
Filed Sep. 29, 1978, Ser. No. 947,248
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

259,410
SELF-PROPELLED TROLLEY FOR SUSPENDED MONORAIL CONVEYERS
Gaetano di Rosa, Pino Torinese, Italy, assignor to F.A.T.A. -Fabbrica Apparecchi di Sollevamento E Trasporto Ed Affini S.p.A., Turin, Italy
Filed Sep. 28, 1978, Ser. No. 946,922
Claims priority, application Italy, Apr. 7, 1978, 53156/78[U]
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60

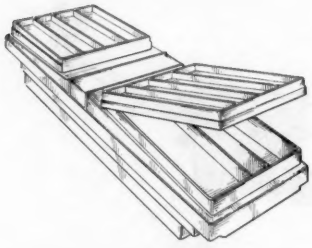


259,411
AIRPLANE
Douglas S. Miller, and David J. Nielson, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 12, 1977, Ser. No. 859,899
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—341

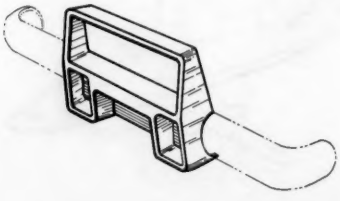
259,412
AIRPORT TRANSPORTATION VEHICLE
Louis D. Jenkins, 1 Park Ave., Skirvin Plaza Hotel, Oklahoma City, Okla. 73102
Filed Feb. 1, 1979, Ser. No. 8,231
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—83



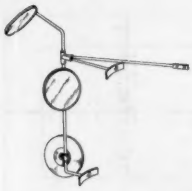
259,413
TOOL BOX FOR A VEHICLE OR THE LIKE
John Rehkopf, 1050 Leith, Maumee, Ohio 43537
Filed Jul. 3, 1978, Ser. No. 921,876
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



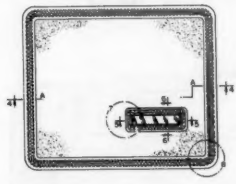
259,414
MOTOR VEHICLE BUMPER GUARD
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024
Filed Aug. 24, 1978, Ser. No. 936,473
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—167



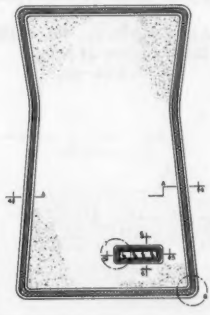
259,415
BACK-UP REAR VIEW MIRROR FOR TRUCKS AND LIKE VEHICLES
Toshio Watanabe, 24007 S. Broad St., Carson, Calif. 90745
Filed Jun. 7, 1979, Ser. No. 46,302
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



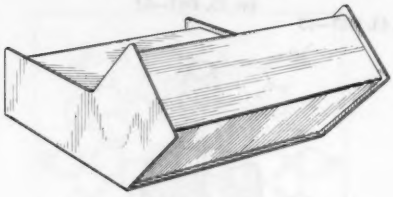
259,416
AUTOMOBILE FLOOR MAT
Ted A. Bell, Coshocton, and Daniel F. Lehner, W. Lafayette, both of Ohio, assignors to Pretty Products, Inc., Coshocton, Ohio
Filed Nov. 9, 1978, Ser. No. 958,965
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



259,417
AUTOMOBILE FLOOR MAT
Ted A. Bell, Coshocton, and Daniel F. Lehner, W. Lafayette, both of Ohio, assignors to Pretty Products, Inc., Coshocton, Ohio
Filed Nov. 9, 1978, Ser. No. 958,966
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203

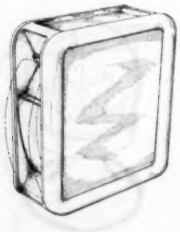


259,418
MODULAR ELECTRONIC EQUIPMENT CASE
James L. Allen, Ellicott City, Md., assignor to G.S.B. Rail Ltd., Silver Spring, Md.
Filed Oct. 6, 1978, Ser. No. 949,359
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41

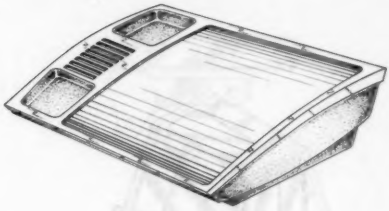


259,419
TELEPHONE INSTRUMENT
Ronald D. Carter, Warwick, England, assignor to The Post Office, London, England
Filed Apr. 5, 1978, Ser. No. 893,629
Claims priority, application United Kingdom, Oct. 12, 1977, 981881/77
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl D14—53

259,420
TELEPHONE STAND
Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 25, 1978, Ser. No. 936,701
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

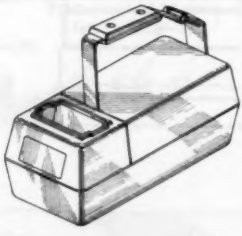


259,421
TELEPHONE INSTRUMENT BASE
George M. Janda, Westchester, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Sep. 22, 1978, Ser. No. 944,827
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

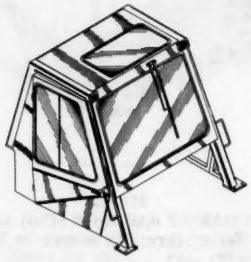


259,422
TWO-WAY MARINE RADIO OR SIMILAR ARTICLE
Terrance N. Taylor, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 15, 1978, Ser. No. 961,085
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

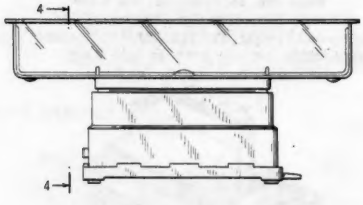
259,423
HOUSING FOR A HAND HELD TRANSMITTER-RECEIVER
James A. Root, Orlando, and Arleigh B. Baker, Longwood, both of Fla., assignors to Scope Incorporated, Reston, Va.
Filed Jan. 18, 1979, Ser. No. 4,494
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—95



259,424
VEHICLE CAB
Terry L. Puig, Salem, Oreg., assignor to Towmotor Corporation, Mentor, Ohio
Filed Jul. 9, 1979, Ser. No. 55,589
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—30



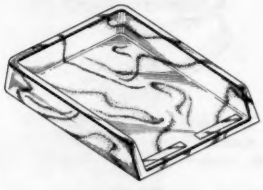
259,425
VIBRATORY DEVICE FOR CLEANING JEWELRY AND THE LIKE
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Oct. 10, 1978, Ser. No. 949,533
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—34



259,426
MUTE FOR A BRASS MUSICAL INSTRUMENT OR THE LIKE
Leonard Baldwin, 62 Bincote Rd., Enfield, Middlesex, United Kingdom
Filed Jun. 15, 1979, Ser. No. 49,198
Claims priority, application United Kingdom, Jan. 12, 1979, 98807/79
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—13

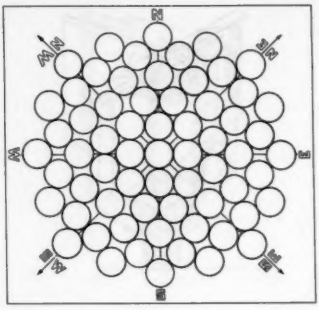
259,427
Patent Not Issued For This Number

259,428
LETTER TRAY
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1978, Ser. No. 907,379
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



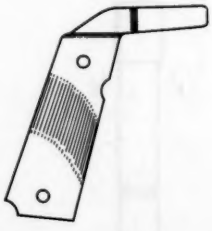
259,429
ELECTRONIC PYRAMID TOY
Thomas J. Sullivan, 8024 Grand Ave., Fair Oaks, Calif. 95628
Filed Jan. 2, 1979, Ser. No. 287
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—37

259,430
GAME BOARD
Emile B. LaCerte, II, 9 Germain Ave., Bradford, Mass. 01830
Continuation-in-part of Ser. No. 883,348, Mar. 3, 1978, abandoned. This application Nov. 23, 1979, Ser. No. 96,890
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—35



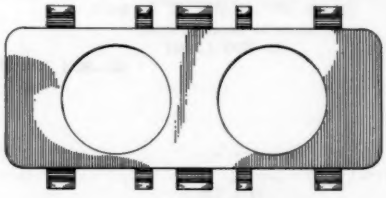
259,431
GOLF PUTTER
Ronald F. Swenson, 2719 N. Logrun Cir., Woodlands, Tex. 77380
Filed Dec. 18, 1978, Ser. No. 970,715
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219

259,432
HANDGUN SUPPORT CLIP
Cecil O. Pharr, Jr., 2272 La Vista Woods Dr., Tucker, Ga. 30084
Filed Aug. 28, 1978, Ser. No. 937,491
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

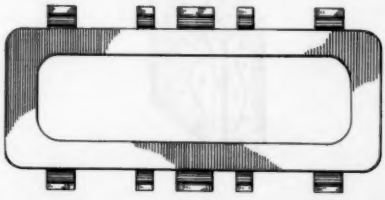


259,433
REVOLVER SUPPORT CLIP
Cecil O. Pharr, Jr., 2272 La Vista Woods Dr., Tucker, Ga. 30084
Filed Sep. 18, 1978, Ser. No. 943,662
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

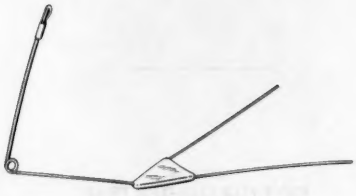
259,434
VENT FOR LOBSTER TRAP
Emile A. P. Plante, 74 Badgers Island, Kittery, Me. 03904
Filed Aug. 8, 1979, Ser. No. 64,890
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



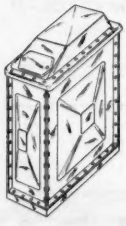
259,435
LOBSTER TRAP VENT
Emile A. P. Plante, 74 Badgers Island, Kittery, Me. 03904
Filed Aug. 8, 1979, Ser. No. 64,913
Term of patent 14 years
Int. Cl. D22—*18*
U.S. Cl. D22—18



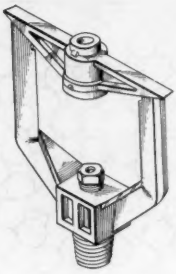
259,436
COMBINED SELF-RIGHTING SINKER AND LURE SUPPORT WITH TRAILING LEGS
Robert J. Dickinson, 501 S. Wisconsin, and James L. Wagner, 515 E. Fourth, both of, Mitchell, S. Dak. 57301
Filed Jun. 6, 1979, Ser. No. 45,997
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30



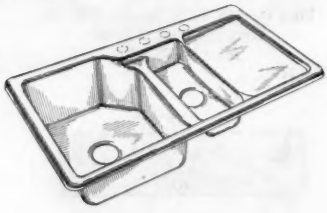
259,437
STORAGE TANK FOR LIQUIDS OR THE LIKE
Keisaku Koga, Ibaraki, and Takeshi Iseda, Yahata, both of Japan, assignors to Sekisui Koji Kabushiki Kaisha, Japan
Filed Oct. 13, 1978, Ser. No. 951,290
Claims priority, application Japan, May 10, 1978, 53-19124
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



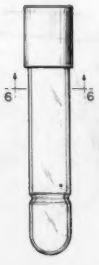
259,438
SPRINKLER HEAD
Larry P. Meyer, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.
Filed May 28, 1980, Ser. No. 154,071
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



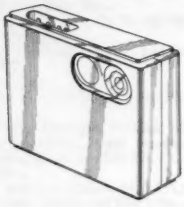
259,439
FOOD PREPARATION SINK
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed May 3, 1979, Ser. No. 35,775
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—62



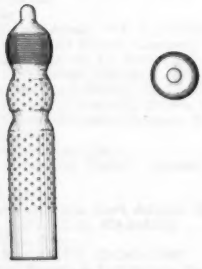
259,440
CULTURE TUBE OR SIMILAR ARTICLE
Mary Jo Martin, Toledo, and Edward W. Metz, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Jul. 3, 1978, Ser. No. 922,001
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—56



259,441
CONTACT LENS DISINFECTING UNIT
Stephen G. Hauser, 4133 Aleman Dr., Tarzana, Calif. 91364
Filed Jun. 11, 1979, Ser. No. 46,997
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—9

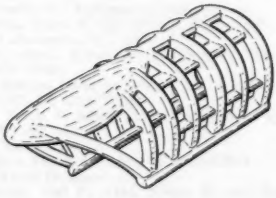


259,442
PROPHYLACTIC DEVICE
Tadao Okamoto, 12-8, 1-chome, Kohinata, Bunkyo-ku, Tokyo, Japan
Continuation-in-part of Ser. No. 943,122, Sep. 18, 1978, Pat. No. Des. 253,009. This application May 17, 1979, Ser. No. 39,815
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D24—99



259,443
WALL PANEL JOINTURE POST
Donald R. James, 1835 S. 7th St., San Jose, Calif. 95112
Filed Oct. 27, 1977, Ser. No. 846,269
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—77

259,444
FINGERNAIL GUARD
Yvonne L. Wood, 7272 Florey st., San Diego, Calif. 92122
Filed Jul. 27, 1978, Ser. No. 928,724
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—56



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF JUNE, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.E.C. Societe de Chimie Organique et Biologique: *See*—
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A. H. Robins Company, Inc.: *See*—
Berger, Brian E., 4,270,273, Cl. 33-150.000.

A/S Akers Mek. Versted: *See*—
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, 4,270,775, Cl. 285-24.000.

AB Olle Lindstrom: *See*—
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Abe, Kazuo: *See*—
Hirato, Motoshiro; Kawagoe, Hazime; Abe, Kazuo; Sato, Tsuyoshi; Miyake, Yasuhiko; Nagai, Masahiro; Furuichi, Katsuhisa; and Shimojima, Kiyoshi, 4,270,373, Cl. 72-41.000.

Abe, Kazutoshi: *See*—
Miki, Katsuo; and Abe, Kazutoshi, 4,271,214, Cl. 427-345.000.

Abele, Werner; Grossa, Mario; and Pilz, Otto, to Du Pont de Nemours, E. I., and Company. Positive nonsilver washout systems containing dihydropyridines and photooxidants. 4,271,260, Cl. 430-292.000.

Abeyama, Shozo: *See*—
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,270,950, Cl. 75-126.00L.

Abma, Charles B.: *See*—
Pastorino, Ronald L.; Lewis, Roger N.; and Abma, Charles B., 4,271,279, Cl. 525-387.000.

ACF Industries, Incorporated: *See*—
Behle, Gunter R.; and Hillstead, David P., 4,270,729, Cl. 251-144.000.
Hinrichs, John M., 4,270,730, Cl. 251-214.000.

Acme Cleveland Corporation: *See*—
Pond, Robert J., 4,271,448, Cl. 361-93.000.

Adachi, Toshio: *See*—
Hamakawa, Yoshihiro; Okamoto, Hiroaki; Nitta, Yoshiteru; and Adachi, Toshio, 4,271,328, Cl. 136-249.000.

Adam, Manfred, to Wickmann-Werke AG. Holder for electrical component. 4,270,836, Cl. 339-213.00R.

Adamec, Robert. Finger ring with plectrum. 4,270,433, Cl. 84-322.000.

Adams, Carl P.; Allen, Royce D.; and Kokaly, Frederick L., to Caterpillar Tractor Co. Bulldozer blade mounting assembly. 4,270,616, Cl. 172-811.000.

Adams, Elvis E., to Baxter Travenol Laboratories, Inc. Frangible valve assembly for blood bags and the like. 4,270,534, Cl. 128-214.00D.

Adams, Frederick J., to Cam Gears Limited. Rotatable sleeve rack. 4,270,397, Cl. 74-89.180.

Adams, Neil R.: *See*—
Drake, Cyril F.; and Adams, Neil R., 4,271,057, Cl. 260-29.60M.

Adams, Norbert, to General Electric Company. Optocoupler having improved isolation. 4,271,365, Cl. 250-551.000.

Adams, William J.; and Wernet, William F., to Northern Telecom, Inc. Pushbutton dial assembly. 4,271,333, Cl. 179-90.00K.

Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., to CNG Research Company. Gas separation process. 4,270,937, Cl. 62-17.000.

Admiral Watchband Co., Inc.: *See*—
Meyerson, Stanley; and Hauser, Seymour, 4,270,249, Cl. 24-241.0PP.

Adolphi, Heinrich: *See*—
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,271,171, Cl. 424-266.000.

Aeroquip Corporation: *See*—
Upham, Neil R., 4,270,717, Cl. 248-27.100.

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Ishikawa, Toshio; Niwa, Shuichi; Yamadaya, Shoko; and Orito, Yoshio, 4,271,327, Cl. 585-440.000.
Nakane, Masanori; Osumi, Yasuaki; Suzuki, Hiroshi; and Kato, Aakihiko, 4,270,360, Cl. 62-48.000.

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Stemme, Otto; Staudacher, Frank; Lermann, Peter; and Wagensonner, Eduard, 4,270,854, Cl. 354-76.000.

AGFA-GEVAERT N.V.: *See*—
Gilliams, Yvan K.; and De Roo, Pierre R., 4,271,249, Cl. 430-101.000.

Ahlenfeld, Carl B.; and Macey, James D. Lacrosse stick head. 4,270,756, Cl. 273-326.000.

Ahrendt, William A.; and Beggs, Donald, to Midrex Corporation. Apparatus for direct reduction of iron using high sulfur gas. 4,270,739, Cl. 266-156.000.

Aid, James D.; and Lee, Kyu H., to Extracorporeal Medical Specialties, Inc. Dialysis apparatus and technique. 4,271,014, Cl. 210-86.000.

Aignesberger, Alois; Lukas, Walter; and Weinberg, Erkehard, to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft. Inorganic fibers. 4,270,954, Cl. 106-47.00R.

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Chen, Michael S.; Greskovich, Eugene J.; and Spector, Marshall L., 4,271,026, Cl. 210-605.000.
Rowles, Howard C.; and Woodward, Donald W., 4,270,939, Cl. 62-22.000.
Rowles, Howard C.; and Tsao, Tsun-chiu, 4,270,940, Cl. 62-28.000.

Airco, Inc.: *See*—
Schmidt, Wallace B.; Lewis, William W.; Edmiston, Alex; and Klauser, Gernot, 4,270,938, Cl. 62-22.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,270,472, Cl. 112-158.00E.

Aizawa, Hideyuki: *See*—
Setsuda, Tsutomu; Aizawa, Hideyuki; and Kimura, Takeshi, 4,271,318, Cl. 564-468.000.

Akagi, Shigeyuki: *See*—
Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, 4,271,513, Cl. 371-22.000.

Akashi, Shunji, to Yoshida Kogyo K.K. Slide fastener with bottom stop. 4,270,248, Cl. 24-205.11R.

Akebono Brake Industry Co. Ltd.: *See*—
Matsuzaki, Takashi, 4,270,634, Cl. 188-196.00M.

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Graber, Heinz, 4,270,574, Cl. 137-624.110.

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Akzo N.V.: *See*—
Boomgaard, Ritse E.; Buter, Roelof; and Kiffen, Aleidus A., 4,271,062, Cl. 260-39.00P.
de Wied, David; and Greven, Hendrik M., 4,271,152, Cl. 424-177.000.

Akzona Incorporated: *See*—
van der Burg, Willem J., 4,271,177, Cl. 424-274.000.
van der Burg, Willem J., 4,271,178, Cl. 424-274.000.
van der Burg, Willem J., 4,271,179, Cl. 424-274.000.

Albany International Corp.: *See*—
Hahn, Edward R., 4,271,222, Cl. 428-193.000.
Nicholson, Charles B., 4,270,702, Cl. 239-455.000.

Albert, Paul A.: *See*—
Heiman, Neil D.; White, Robert L.; Potter, Robert I.; and Albert, Paul A., 4,271,232, Cl. 428-332.000.

Albertson, Luther D., Jr. Circle cutting attachment. 4,270,425, Cl. 83-411.00R.

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Alco Foodservice Equipment Company: *See*—
Rodth, Joseph J., 4,270,673, Cl. 222-129.300.

Alcon Laboratories, Inc.: *See*—
Schoenwald, Ronald D.; and Roehrs, Robert E., 4,271,143, Cl. 424-78.000.

Alieri, Rodiero. Mold for molding hollow bricks by means of a press. 4,270,893, Cl. 425-415.000.

Allard, Pierre, to Allard S.a.r.l. Load transfer system. 4,270,880, Cl. 414-391.000.

Allard S.a.r.l.: *See*—
Allard, Pierre, 4,270,880, Cl. 414-391.000.

Allen, Royce D.: *See*—
Adams, Carl P.; Allen, Royce D.; and Kokaly, Frederick L., 4,270,616, Cl. 172-811.000.

Aller-Screen, Inc.: *See*—
Brennan, Louis G., 4,270,548, Cl. 128-743.000.

Allied Chemical Corporation: *See*—
Barrett, Joseph J.; and West, Gary A., 4,270,864, Cl. 356-301.000.
Harrison, David M.; Watson, Walter E., III; Moore, Maurice S.; and Jermyn, Roger E., 4,270,252, Cl. 28-250.000.

Allis-Chalmers Corporation: *See*—
Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., 4,270,899, Cl. 432-58.000.
Johnston, David K.; and Suderman, Donald A., 4,270,551, Cl. 130-27.00H.
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Almasi, George S.; Bogholtz, Wilhelm E.; and Keefe, George E., to International Business Machines Corporation. Bubble domain storage using improved transfer switch. 4,271,485, Cl. 365-16.000.

Alps Electric Co., Ltd.: *See*—
Takayama, Akira, 4,271,534, Cl. 455-270.000.

Altenpohl, Paul J.: *See*—
Altenpohl, William F.; and Altenpohl, Paul J., 4,270,336, Cl. 53-493.000.

Altenpohl, William F.; and Altenpohl, Paul J., to W. F. Altenpohl, Inc. Distributed plural station bagging system for poultry. 4,270,336, Cl. 53-493.000.

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Luschen, Joseph G., 4,271,113, Cl. 264-112.000.

AM International, Inc.: *See—*
Lay, Roger F.; Jarecki, John S.; and Koch, Robert M., 4,270,652, Cl. 198-486.000.

Amano, Toshio: *See—*
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Ambros, Otto: *See—*
Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.

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Kuchenbecker, Morris W., 4,270,659, Cl. 206-538.000.

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Wolfe, Henry S., 4,270,227, Cl. 2-87.000.

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Coleman, Denis; and Koroscil, Anthony, 4,271,056, Cl. 260-29.6AN.

American Hoechst Corporation: *See—*
Kelley, Donald J.; Williams, David J.; and Slovenkai, Stephen V., 4,271,281, Cl. 526-80.000.
Wenghoefer, Johann; Messier, Dennis; and Thompson, James, 4,271,072, Cl. 260-207.300.

American Microsystems, Inc.: *See—*
Hiltpold, William R., 4,271,418, Cl. 357-23.000.

Aminger, Gerhard A.: *See—*
Oberth, Hans G.; and Aminger, Gerhard A., 4,270,562, Cl. 137-115.000.

Amort, Jurgen: *See—*
Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.

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Bakermans, Johannes C. W., 4,270,267, Cl. 29-881.000.

Amrhein, Alan G.; Hammel, Joseph J.; and Shelestak, Larry J., to PPG Industries, Inc. Method of melting flat glass using nitrates to suppress sulfurous emissions. 4,270,945, Cl. 65-99.00A.

Amundsen, Alan R.; and Stern, Eric W., to Engelhard Minerals & Chemicals Corporation. Cis-platinum (II) amine lactate complexes. 4,271,085, Cl. 260-429.00R.

Anaconda Company, The: *See—*
Mahmood, Kamal A., 4,271,521, Cl. 371-51.000.

Ancos Co., Ltd.: *See—*
Hashimoto, Yasuyuki; and Torii, Osamu, 4,270,870, Cl. 401-93.000.

Andersen, Glen L.: *See—*
Siekmeier, David A.; Andersen, Glen L.; Zimmerer, Arthur L., deceased; First National Bank & Trust Co., joint executor; Zimmerer, Bernadette, joint executor; and Zimmerer, William P., 4,270,699, Cl. 239-184.000.

Anderson-Cook, Inc.: *See—*
Jungesjo, Harald N., 4,270,375, Cl. 72-88.000.

Anderson, James C. Speech signal A/D converter using an instantaneously-variable bandwidth filter. 4,271,332, Cl. 179-1.50A.

Anderson, Larry W., to Westinghouse Electric Corp. Transit vehicle speed control apparatus and method. 4,270,716, Cl. 246-182.00B.

Anderson, Leif. Elevator device preferably an elevator for building facades. 4,270,628, Cl. 187-6.000.

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Anderson, Rogers H.; G., Enrique Bernal; and Chen, Di, to Honeywell Inc. Hot rolling and extrusion of optical fiber ribbon cable. 4,271,104, Cl. 264-1.500.

Andersson, Ken G. E., to Sandvik Aktiebolag. Cutting tool. 4,270,422, Cl. 82-36.00R.

Andreas, Joseph M. Multiple chamber container for delivering liquid under pressure. 4,270,533, Cl. 128-214.00F.

Andreoni, Alessandro: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,271,183, Cl. 424-285.000.
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,271,184, Cl. 424-285.000.

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Antonious, Anthony J. Adjustable and flexible shoe closure assembly and elastic gore. 4,270,285, Cl. 36-50.000.

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Arai, Jun: *See—*
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Arai, Kiyotaka: *See—*
Suhara, Manabu; Goto, Shoziro; and Arai, Kiyotaka, 4,270,996, Cl. 204-98.000.

Arakawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Matsuo, Kohtaro; Kawamura, Satoshi; and Toshine, Tatsumi, 4,271,066, Cl. 260-97.500.

Archer Daniels Midland Company: *See—*
Arnold, John B., 4,270,671, Cl. 222-58.000.

Arco Polymers, Inc.: *See—*
DiGiulio, Adolph V.; and Bauer, Jack N., 4,271,271, Cl. 521-82.000.

Argus Chemical Corporation: *See—*
Pastorino, Ronald L.; Lewis, Roger N.; and Abma, Charles B., 4,271,279, Cl. 525-387.000.

Arietti, Giulio: *See—*
Occella, Sergio; Arietti, Giulio; and Borello, Giampiero, 4,270,498, Cl. 123-276.000.

Ariga, Nagao: *See—*
Maeda, Hiroshi; Ariga, Nagao; Oikawa, Hiroshi; and Tominaga, Hidemitsu, 4,271,079, Cl. 260-346.300.

Arigaya, Fujio, to Takara Co., Ltd. Remote controlled steerable amphibious toy. 4,270,307, Cl. 46-254.000.

Arita, Youji, to Mitsubishi Light Metal Industries, Limited. Method of stabilizing an aluminum metal layer in an aluminum electrolytic cell. 4,270,993, Cl. 204-67.000.

Armstrong Cork Company: *See—*
Heckles, John S., 4,271,237, Cl. 428-520.000.

Armstrong, Donald E.; Sindlinger, Ronald E.; and Harvey, William J., to GTE Products Corporation. Photoflash lamp construction and method of making same. 4,270,897, Cl. 431-362.000.

Armstrong Industries, Inc.: *See—*
Peters, John R.; and Armstrong, Warren G., 4,270,527, Cl. 128-87.00R.

Armstrong, Thomas R., to Paradyne Corporation. Double side band-quadrature carrier modulation signal structures. 4,271,527, Cl. 375-39.000.

Armstrong, Warren G.: *See—*
Peters, John R.; and Armstrong, Warren G., 4,270,527, Cl. 128-87.00R.

Arnaudeau, Marcel; and Verschure, Pietrus, to Institut Francais du Petrole. Mooring station and transfer terminal for offshore hydrocarbon production. 4,270,611, Cl. 166-344.000.

Arndts, Dietrich: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Arndts, Dietrich; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,271,175, Cl. 424-273.00R.

Arnold, Franz. Mechanical amplifier. 4,270,398, Cl. 74-110.000.

Arnold, John B., to Archer Daniels Midland Company. Dispenser for bulk particulate material. 4,270,671, Cl. 222-58.000.

Aron, Steven J., Jr.: *See—*
Stone, Leonard R.; Aron, Steven J., Jr.; and Kemmerling, Robert A., 4,271,362, Cl. 250-496.000.

Artzan Corporation: *See—*
Xanthopoulos, Piritheos G.; and Stewart, Lloyd W., 4,270,303, Cl. 46-25.000.

Asahi Glass Company, Ltd.: *See—*
Suhara, Manabu; Goto, Shoziro; and Arai, Kiyotaka, 4,270,996, Cl. 204-98.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Imafuku, Hiroshi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,271,001, Cl. 204-195.00B.

Asahi Seimitsu Kabushiki Kaisha: *See—*
Koenuma, Masao, 4,270,277, Cl. 33-439.000.

Asano, Kazuhiro: *See—*
Shida, Masaharu; Torisawa, Akira; Ueda, Makoto; Mandai, Masaaki; Sato, Katsuhiko; and Asano, Kazuhiro, 4,271,496, Cl. 368-80.000.

Asano, Makoto; Kawashima, Saburo; Sugimoto, Kenichi; and Kobayashi, Tadashi, to Mitsui Toatsu Chemicals Inc. Color-developing

composition for pressure-sensitive recording sheet material and process for the preparation thereof containing phenolic resin and hindered phenol. 4,271,059, Cl. 260-31.20T.

Ashby, Albert K.: *See—*
DePalma, Vito A.; Meyer, Anne E.; and Ashby, Albert K., 4,271,209, Cl. 427-58.000.

Ashland Oil, Inc.: *See—*
Kim, Young D., 4,271,054, Cl. 260-29.300.
Trivedi, Bhupendra C.; Grote, Dace; and Mason, Thomas O., 4,270,983, Cl. 203-43.000.

Asselman, George A. A.: *See—*
Mahdjuri, Faramarz; Asselman, George A. A.; and de Grijs, Johan C., 4,270,520, Cl. 126-433.000.

Asseo, Edouard: *See—*
Broc, Guillaume; and Asseo, Edouard, 4,271,506, Cl. 370-89.000.

Atkins, Terrance J.: *See—*
Walters, L. Kirk; Judd, Richard K.; and Atkins, Terrance J., 4,271,094, Cl. 261-39.00B.

Atkinson, Joseph G.; Rooney, Clarence S.; Girard, Yves; and Engelhardt, Edward L., to Merck & Co., Inc. Substituted phenyl alanine antihypertensive agents. 4,271,187, Cl. 424-309.000.

Atlantic Richfield Company: *See—*
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Baillie, Lloyd A., 4,270,926, Cl. 44-1.0SR.
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Troncoso, Nestor J., 4,270,927, Cl. 44-1.0SR.
Pritchett, William C., 4,270,626, Cl. 181-113.000.

Atlas Powder Company: *See—*
Hurst, Gerald L., 4,270,435, Cl. 86-1.00R.
Janoski, Florian B., 4,270,455, Cl. 102-318.000.

Au, Dean T.: *See—*
Saunders, Robert C.; Au, Dean T.; Williams, W. Ray; and Zurek, Donald, 4,271,472, Cl. 364-481.000.

Audi NSU Auto Union AG: *See—*
Will, Heinz-Dieter; Dommes, Werner; and Polzl, Hans-Werner, 4,270,356, Cl. 60-602.000.

August Lepper Maschinen- und Apparatebau GmbH: *See—*
Muller, Franz, 4,270,281, Cl. 34-75.000.

Auto-Miser International Manufacturing Corp.: *See—*
Johnson, Randall W., 4,270,505, Cl. 123-522.000.

Automotive Products Limited: *See—*
Davies, David A., 4,270,640, Cl. 192-70.140.
Young, Alastair J., 4,270,807, Cl. 303-22.00R.

Axtell, Clyde R., III; and Drabing, Richard B., to John Fluke Mfg. Co., Inc. Universal analog and digital tester. 4,271,515, Cl. 371-25.000.

Azusawa, Noboru, to Hitachi, Ltd. Control system for commutatorless motor. 4,271,385, Cl. 318-722.000.

B. F. G. Glassgroup: *See—*
Janssens, Theo; and Willems, Victor, 4,270,688, Cl. 228-5.100.

Babberl, Marion G., to Rapid Mounting & Finishing Company. Sign construction. 4,270,291, Cl. 40-594.000.

Babbitt, William M., to Owens-Corning Fiberglas Corporation. Apparatus for processing heat softened mineral material. 4,270,941, Cl. 65-1.000.

Bachli, Emil. Solar collector. 4,270,524, Cl. 126-443.000.

Bachner, Ernst, to Voest-Alpine Aktiengesellschaft. Method of changing the cross sectional format of a strand and a plate mould for carrying out the method. 4,270,593, Cl. 164-82.000.

Bader, Edgar: *See—*
Parras, Karlheinz; Bader, Edgar; and Dupont, Helmut, 4,271,514, Cl. 371-22.000.

Baggett, William M.: *See—*
Plischke, LeMoyne W.; and Baggett, William M., 4,271,233, Cl. 428-370.000.

Baillie, Lloyd A.: *See—*
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Baillie, Lloyd A., 4,270,926, Cl. 44-1.0SR.

Bainard, Dean R.; and Benjamin, Martin, to Garlock Inc. Disc brake boot. 4,270,442, Cl. 92-168.000.

Baker, Benjamin R.; and Baker, Mickey C. Produce handling system. 4,270,881, Cl. 414-398.000.

Baker, Eugene E.: *See—*
Hendrickson, James D.; White, Pat M.; Davis, Odie R. S.; Workman, Nolan M.; Baker, Eugene E.; and Szarka, David D., 4,270,608, Cl. 166-278.000.

Baker International Corporation: *See—*
McStravick, David M.; and Roberts, William M., 4,270,606, Cl. 166-181.000.

Baker, James G., to Polaroid Corporation. Periscopic viewfinder system for use in photographic cameras. 4,270,837, Cl. 350-54.000.

Baker, Judd O.; O'Brien, Jerome J.; Curtis, Westley F.; and Varney, Frederick M., to United States of America, Navy. Torpedo guards. 4,270,479, Cl. 114-240.00A.

Baker, Mickey C.: *See—*
Baker, Benjamin R.; and Baker, Mickey C., 4,270,881, Cl. 414-398.000.

Baker, Richard H., to Exxon Research and Engineering Company. Soft turn-on power. 4,271,460, Cl. 363-49.000.

Bakermans, Johannes C. W., to AMP Incorporated. Machine for mass insertion of electrical terminals. 4,270,267, Cl. 29-881.000.

Baldwin, John L. E.; and Corbyn, Terence E., to Independent Broadcasting Authority. Delay circuits. 4,271,483, Cl. 364-900.000.

Ballew, Ray D. Thermal pool cover. 4,270,232, Cl. 4-498.000.

Balog, Leonard J.: *See—*
Andrews, Harry N.; Eglinton, Edmund C.; Gulaskey, Joseph W.; Balog, Leonard J.; and Beer, Robert W., 4,270,258, Cl. 29-157.400.

Bancsi, Joseph A.: *See—*
Scott, James W.; Bancsi, Joseph A.; and Kersten, Jean, 4,270,725, Cl. 251-6.000.

Barber, Everett M., Jr.: *See—*
Hopper, Thomas P.; and Barber, Everett M., Jr., 4,270,516, Cl. 126-417.000.

Barkas, Emanuel E., to Harvey Hubbell Incorporated. Safety receptacle. 4,271,337, Cl. 200-51.090.

Barnes, Gerald W., to W. S. Coswell Limited. Method of making bingo or tombola tickets and article produced thereby. 4,270,774, Cl. 283-62.000.

Barnett, William K.: *See—*
Barnett, William O.; and Barnett, William K., 4,270,470, Cl. 110-346.000.

Barnett, William O.; and Barnett, William K. Combustion system and method for burning fuel with a variable heating value. 4,270,470, Cl. 110-346.000.

Barrett, Joseph J.; and West, Gary A., to Allied Chemical Corporation. Photoacoustic rotational raman spectroscopy. 4,270,864, Cl. 356-301.000.

Barrington, Burchus Q., to Halliburton Company. Annulus pressure operated closure valve with improved power mandrel. 4,270,610, Cl. 166-317.000.

Barry, Michael J., to Dresser Europe S.A. Pre-start warning device for a machine. 4,270,800, Cl. 299-1.000.

Barsotti, Giuliano: *See—*
Giovannetti, Sergio; Barsotti, Giuliano; and Donati, Giovanni, 4,271,023, Cl. 210-321.300.

Base, Jimmy D. Downhole stabilizing tool with actuator assembly and method for using same. 4,270,619, Cl. 175-61.000.

Basel, Donald R.: *See—*
Kawolics, Raymond P.; and Basel, Donald R., 4,271,024, Cl. 210-474.000.

BASF Aktiengesellschaft: *See—*
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,271,171, Cl. 424-266.000.
Hansen, Guenter; Pottgiesser, Hermann; and Schlindwein, Walter, 4,271,231, Cl. 428-323.000.
Lotsch, Wolfgang; and Hilbert, Peter, 4,271,301, Cl. 544-296.000.
Lotsch, Wolfgang, 4,271,309, Cl. 548-364.000.
Thyes, Marco; Gries, Josef; Lehmann, Hans D.; Lenke, Dieter; and Kunze, Johannes, 4,271,163, Cl. 424-250.000.
Vamvakaris, Christos; Neumann, Peter; and Patsch, Manfred, 4,271,303, Cl. 546-155.000.

BASF Wyandotte Corporation: *See—*
Christman, Donald L.; and Kan, Peter T., 4,271,087, Cl. 260-453.0AB.

Batchelder, Leonard E. Fire extinguisher holder. 4,270,722, Cl. 248-310.000.

Battista, Anthony M. Sound actuated clock-mirror. 4,271,492, Cl. 368-10.000.

Baucom, Joe B.; and Donnelly, James E., to Spin-O-Magic, Inc. Rotating ring yarn spinning or twisting apparatus and method. 4,270,340, Cl. 57-75.000.

Baudry, Sylvie: *See—*
Broussely, Michel; and Baudry, Sylvie, 4,271,243, Cl. 429-194.000.

Bauer, Jack N.: *See—*
DiGiulio, Adolph V.; and Bauer, Jack N., 4,271,271, Cl. 521-82.000.

Baughn, Daniel L.: *See—*
Kimball, David V.; and Baughn, Daniel L., 4,270,390, Cl. 73-663.000.

Baum, Gerald L., to National Mine Service Company. Cutter drum drive assembly for canted end sections. 4,270,803, Cl. 299-76.000.

Baum, Marcel; Frankenberger, Horst; and Schwanbom, Erik, to Dragerwerk Aktiengesellschaft. Tracheal tube. 4,270,530, Cl. 128-204.250.

Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, to BASF Aktiengesellschaft. Aroylureas. 4,271,171, Cl. 424-266.000.

Baumann, Gerhard, to Interhydro AG. Plant receiving vessel for insertion in a hydroponic vessel. 4,270,309, Cl. 47-59.000.

Baxter Travenol Laboratories, Inc.: *See—*
Adams, Elvis E., 4,270,534, Cl. 128-214.00D.
Bunting, James R., 4,271,140, Cl. 424-1.000.
Scott, James W.; Bancsi, Joseph A.; and Kersten, Jean, 4,270,725, Cl. 251-6.000.

Bayer Aktiengesellschaft: *See—*
Bremen, Josef; Wehling, Bernhard; and Schellhammer, Carl-Wolfgang, 4,271,293, Cl. 542-435.000.
Brinkmann, Uwe; Telle, Helmut; and Raue, Roderich, 4,271,395, Cl. 331-94.50L.
Diller, Werner; Drope, Eckard; Ellendt, Gunther; and Reichold, Ernst, 4,271,121, Cl. 422-56.000.
Endres, Robert; Drave, Heinz; Mansmann, Manfred; and Puppe, Lothar, 4,271,130, Cl. 423-118.000.
Forster, Heinz; Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,271,186, Cl. 424-304.000.
Hoffmann, Erwin; Krippl, Kurt; Kraft, Karl J.; Gabrysch, Gerd; and Redmer, Frank, 4,270,889, Cl. 425-115.000.
Reffelmann, Gerd, 4,271,108, Cl. 264-51.000.
Schubart, Rudiger; and Braden, Rudolf, 4,270,998, Cl. 204-158.0HA.

Bayon, Patrice M., to L'Aiglon. Holding net, particularly for the stowing of loads on pallets and the like. 4,270,657, Cl. 206-386.000.

BBC Brown, Boveri & Co. Ltd.: *See*—
Bellati, Hans, 4,270,814, Cl. 308-160.000.
Holzinger, Karl, 4,270,563, Cl. 137-116.500.
Kmetz, Allan R., 4,271,391, Cl. 324-103.00P.
Zaugg, Paul, 4,270,342, Cl. 60-39.040.

Bean, Eric R.: *See*—
Southard, James S.; and Bean, Eric R., 4,270,431, Cl. 84-1.240.

Beccaris, Carlo, to Societe Anonyme Francaise Du Ferodo. Torsion damping center and a clutch plate assembly having such a torsion damping center. 4,270,645, Cl. 192-106.100.

Beck, Bernhard: *See*—
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,271,044, Cl. 252-462.000.

Becker, Joseph J.; and Ohloff, Gunther, to Firmenich, S.A. Tricyclic lactones. 4,271,076, Cl. 260-343.210.

Beckman, Glenn B., to Susquehanna Broadcasting Company. Closure seal for containers. 4,270,666, Cl. 215-364.000.

Beckman, Gregg S., to Pako Corporation. Photosensor circuit for photographic printer. 4,270,861, Cl. 355-38.000.

Beckman Instruments, Inc.: *See*—
Hawkins, John J., 4,271,002, Cl. 204-195.00M.

Beecham Group Limited: *See*—
Hindley, Richard M., 4,271,188, Cl. 424-309.000.

Beer, Robert W.: *See*—
Andrews, Harry N.; Eglinton, Edmund C.; Gulaskey, Joseph W.; Balog, Leonard J.; and Beer, Robert W., 4,270,258, Cl. 29-157.400.

Beggs, Donald: *See*—
Ahrendt, William A.; and Beggs, Donald, 4,270,739, Cl. 266-156.000.

Begunov, Petr M.: *See*—
Ragoza, Igor V.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Dina N.; and Tonikian, Robert T., 4,270,368, Cl. 66-13.000.

Behle, Gunter R.; and Hillstead, David P., to ACF Industries, Incorporated. Top operated tank car clapper value. 4,270,729, Cl. 251-144.000.

Behling, James R., to G. D. Searle & Co. Electrochemical dehydrogenation of steroidal $\Delta^{3,5}$ enol ethers under basic conditions to provide steroidal $\Delta^{4,6}$ dienones. 4,270,994, Cl. 204-78.000.

Behringer, Donald F.: *See*—
Rossi, Anthony J.; and Behringer, Donald F., 4,270,357, Cl. 60-660.000.

Behringwerke Aktiengesellschaft: *See*—
Helting, Torsten B.; and Guthohrlein, Gerhard, 4,271,147, Cl. 424-92.000.

Beijer, Per A. O.; and Strandas, Lars O., to Saab-Scania Aktiebolag. Hub gear for wheeled vehicles. 4,270,412, Cl. 74-801.000.

Belanger, Guy; and Missout, Gilles, to Hydro-Quebec. Apparatus for detecting and measuring the hydrogen content in a liquid substance. 4,271,474, Cl. 364-500.000.

Beling, Thomas E.; and Bric, Leopold, to Sigma Instruments, Inc. Synchronous motor drive. 4,271,384, Cl. 318-685.000.

Bell Telephone Laboratories, Incorporated: *See*—
Brolin, Stephen J., 4,271,509, Cl. 370-110.000.
Copeland, John A., 4,271,536, Cl. 455-619.000.
Goodman, David J.; Henry, Paul S.; and Prabhu, Vasant K., 4,271,524, Cl. 375-1.000.
Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., 4,271,445, Cl. 361-56.000.

Bellati, Hans, to BBC Brown, Boveri & Co. Ltd. Thrust bearing. 4,270,814, Cl. 308-160.000.

Belioc, Andre; Florent, Jean; Lunel, Jean; Mancy, Denise; and Palla, Jean-Claude, to Rhone-Poulenc Industries. Glycopeptide. 4,271,067, Cl. 260-112.00R.

Bender, Fredrick L., to Bender's Sales & Service, Inc. Reinforcing structure. 4,270,334, Cl. 52-828.000.

Bender, Heinz; Beyerle, Rudi; Keil, Karl-Heinz; Greve, Heinz G.; and Reh, Kuno, to Cassella Aktiengesellschaft. 6-Substituted-9-(2-hydroxyethyl)-1,2,3,4-tetrahydro carbazol-1-one. 4,271,073, Cl. 260-315.000.

Bender's Sales & Service, Inc.: *See*—
Bender, Fredrick L., 4,270,334, Cl. 52-828.000.

Bendix Corporation, The: *See*—
Marsh, Edward K., 4,270,825, Cl. 339-47.00R.

Beneke, Wolfgang, to Trutzschler GmbH & Co. KG. Carding flat arrangement. 4,270,246, Cl. 19-113.000.

Benjamin, Martin: *See*—
Bainard, Dean R.; and Benjamin, Martin, 4,270,442, Cl. 92-168.000.

Benjamin, Martin E.: *See*—
Denton, Dennis N.; and Benjamin, Martin E., 4,270,759, Cl. 277-1.000.

Bennett, Lawrence R.: *See*—
Blankley, Clifton J.; and Bennett, Lawrence R., 4,271,164, Cl. 424-251.000.

Bennett, Richard C., to Whiting Corporation. Liquid-vapor separation device and method. 4,270,975, Cl. 159-27.00A.

Bercha, Frank G.: *See*—
O'Rourke, J. Cam; Pilkington, G. Roger; and Bercha, Frank G., 4,270,476, Cl. 114-40.000.

Berfield, Robert C., to Shop-Vac Corporation. Buckle or latch for holding lid to container. 4,270,668, Cl. 220-324.000.

Berger, Brian E., to A. H. Robins Company, Inc. Measuring instrument. 4,270,273, Cl. 33-150.000.

Berger, Gerald P., to FMC Corporation. Stop for crane boom. 4,270,663, Cl. 212-222.000.

Bergling, Karl T. Linkage system for load-lifting arrangements. 4,270,629, Cl. 187-9.00E.

Bergloff, Dag; Wohlfarter, Alois; Heissenberger, Otto; Muhlhauser, Martin; and Petschauer, Franz, to Anstalt fur Stromungsmaschinen Gesellschaft mbH. Method for making grooved rollers for dehydrating runs of materials. 4,270,254, Cl. 29-148.40D.

Bergy, Malcolm E.; Coats, John H.; and Malik, Vedpal S., to Upjohn Manufacturing Company, The. Process for preparing lincomycin. 4,271,266, Cl. 435-73.000.

Berke, Philip A.; and Rosen, William E., to Sutton Laboratories, Inc. N-(Hydroxymethyl)-N-(1,3-dihydroxymethyl-2,5-dioxo-4-imidazolidinyl)-N'-(hydroxymethyl)urea used as a preservative agent. 4,271,176, Cl. 424-273.00R.

Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., to RCA Corporation. Heat radiation deflectors within an EFG crucible. 4,271,129, Cl. 422-246.000.

Berlied, Henry P., Jr. Ski binding. 4,270,769, Cl. 280-615.000.

Bernard, Pierre J., to La Telemecanique Electrique. Door fastener. 4,270,780, Cl. 292-202.000.

Berry, Clifford D., Jr. Fireplace with sliding doors. 4,270,514, Cl. 126-140.000.

Bertelmann, Gunter; Holtschmidt, Ulrich; and Laqua, Arnold, to Th. Goldschmidt AG. Guanidinium salts, processes for their manufacture as well as microbicidal preparations containing these compounds. 4,271,190, Cl. 424-316.000.

Besson, Rene: *See*—
Zafferri, Roberto; Schneiter, Ali; and Besson, Rene, 4,271,498, Cl. 368-250.000.

Bevilacqua, Frank, to Combustion Engineering, Inc. Parallel flow collar for reducing vibration of a rod within a diffuser. 4,270,979, Cl. 176-78.000.

Beyerle, Rudi: *See*—
Bender, Heinz; Beyerle, Rudi; Keil, Karl-Heinz; Greve, Heinz G.; and Reh, Kuno, 4,271,073, Cl. 260-315.000.

Bhattacharyya, Aniruddha, to Republic Steel Corporation; and Hanna Furnace Corporation, The. Method and apparatus for removing biodegradable compounds from wastewater. 4,271,013, Cl. 210-617.000.

Bianchi, John E. Thumb break holster. 4,270,680, Cl. 224-193.000.

Billet, Rene, to Societe Anonyme Francaise du Ferodo. Torsion shock absorber device suitable for a clutch friction plate. 4,270,644, Cl. 192-106.200.

Binns Fencing Limited: *See*—
Binns, Julian R. H.; and Grange, Kenneth H., 4,270,737, Cl. 256-48.000.

Binns, Julian R. H.; and Grange, Kenneth H., to Binns Fencing Limited. Securing fencing material to posts. 4,270,737, Cl. 256-48.000.

Bio-Energy Systems, Inc.: *See*—
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., 4,270,596, Cl. 165-1.000.

Bio-Rad Laboratories, Inc.: *See*—
Curry, Robert E.; Simonsen, Michael G.; and Schwartz, Eric D., 4,271,123, Cl. 422-64.000.

Biranowski, Jerome B.; Lorenz, Donald H.; and Kantor, Simon W., to GAF Corporation. Rigid isocyanurate polyurethane foams and method for preparing same. 4,271,273, Cl. 521-110.000.

Birzele, Paul; and Geitz, Gerhard, to Siemens Aktiengesellschaft. Data transmission/reception installation with parallel/serial and serial/parallel character conversion for data exchange between communicating data processing systems. 4,271,518, Cl. 371-37.000.

Bisa, Karl; and Bisa, Thomas. Aerosol forming device. 4,270,698, Cl. 239-171.000.

Bisa, Thomas: *See*—
Bisa, Karl; and Bisa, Thomas, 4,270,698, Cl. 239-171.000.

Bishop, James C.; and Patenaude, Raymond A., to General Electric Company. Ammunition feed and eject mechanism. 4,270,436, Cl. 89-33.00R.

Bison-Werke, Bahre & Greten GmbH & Co. KG: *See*—
de Mets, Albert; and Neubauer, Harry, 4,271,105, Cl. 264-26.000.

Bittner, Friedrich: *See*—
Hentsche, Klaus; Bittner, Friedrich; and Schreyer, Gerd, 4,271,297, Cl. 544-190.000.
Hentschel, Klaus; Bittner, Friedrich; and Sohreyer, Gerd, 4,271,298, Cl. 544-190.000.
Hentschel, Klaus; and Bittner, Friedrich, 4,271,299, Cl. 544-218.000.

Bjorklund, Curt A. Valve for a burner system. 4,270,561, Cl. 137-107.000.

Blachly, Beverly J., executor: *See*—
Blachly, Paul H., deceased; and Blachly, Beverly J., executor, 4,270,531, Cl. 128-207.140.

Blachly, Paul H., deceased; and by Blachly, Beverly J., executor. Oropharyngeal airway and bite block assembly and method of use for closed pulmonary ventilation. 4,270,531, Cl. 128-207.140.

Black & Decker Inc.: *See*—
Colberg, Richard A.; and Henry, William T., Jr., 4,270,427, Cl. 83-473.000.
Colberg, Richard A., 4,270,428, Cl. 83-477.200.

Blackburn, Wayne E.; Liston, Max D.; and Stark, William A., to Liston Scientific Corp. Purging system. 4,270,564, Cl. 137-240.000.

Blackshaw, George C., to Polysar Limited. Carboxylated nitrile rubber vulcanizates. 4,271,052, Cl. 260-23.70N.

Blair, Gilbert: *See*—
Lakin, Ira; and Blair, Gilbert, 4,270,982, Cl. 202-241.000.

Blair, Matthew J.: *See*—
Esposito, Edward J.; and Blair, Matthew J., 4,270,949, Cl. 75-60.000.
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Cho, Kenji; Takamizawa, Minoru; and Inoue, Yoshio, to Dai Nippon Printing Co. Ltd.; and Shin-Etsu Chemical Co. Ltd. Method for the preparation of planographic printing plates. 4,271,255, Cl. 430-253.000.
Choules, G. Lew. Tar sand extraction process. 4,270,609, Cl. 166-303.000.
Choulet, Jean-Claude; and Nouvel, Jacques, to Rhone-Poulenc Industries. Process for the continuous rearrangement of alkali metal salts of aromatic carboxylic acids. 4,271,316, Cl. 562-480.000.
Christensen Inc.: *See*—
Reay, Robert G.; and Rachuk, Ronald, 4,270,569, Cl. 137-514.700.
Christensen, Neal T.; Van Loo, William C.; Werner, Robert H.; Wetzel, Joseph A.; and Zeitler, Carl, Jr., to International Business Machines Corp. Multiprocessor mechanism for handling channel interrupts. 4,271,468, Cl. 364-200.000.
Christman, Donald L.; and Kan, Peter T., to BASF Wyandotte Corporation. Carbamylbiuret-modified polyisocyanates. 4,271,087, Cl. 260-453.0AB.
Chumakov, Vasily A. Method and apparatus for producing directionally solidifying cast pieces. 4,270,594, Cl. 164-127.000.
Chylewski, Christoph: *See*—
Mason, Leslie F. A.; Cook, Robert S.; Kilcast, David; Schellenberg, Matthias; and Chylewski, Christoph, 4,271,254, Cl. 430-239.000.
Ciba-Geigy AG: *See*—
Mason, Leslie F. A.; Cook, Robert S.; Kilcast, David; Schellenberg, Matthias; and Chylewski, Christoph, 4,271,254, Cl. 430-239.000.
Ciba-Geigy Corporation: *See*—
Felder, Louis; Kirchmayr, Rudolf; and Kusler, Rinaldo, 4,271,294, Cl. 544-87.000.
Kamber, Bruno; and Rittel, Werner, 4,271,068, Cl. 260-112.50R.
Lohmann, Dieter; and Wyler, Siegfried, 4,271,074, Cl. 260-326.260.
Marfurt, Hans-Rudolf; and Zurrer, August, 4,271,028, Cl. 210-727.000.
Seitz, Karl, 4,270,918, Cl. 8-549.000.
Zurbuchen, Jacques; and Leutenegger, Willi, 4,270,236, Cl. 8-159.000.
CIR S.p.A. Divisione Sasib: *See*—
Cristiani, Athos; and Gherardi, Gianluigi, 4,270,670, Cl. 221-211.000.
Citizen Watch Co., Ltd.: *See*—
Tamaru, Munetaka; and Hatuse, Toshikazu, 4,271,493, Cl. 368-28.000.
Clark, Gary T., to Eastman Kodak Company. Heterocyclic monoazo compounds from alkyl-3-(phenylamino)butyrates. 4,271,071, Cl. 260-157.000.
Clark, Robert E.: *See*—
Tichy, Brian N.; and Clark, Robert E., 4,270,259, Cl. 29-402.060.
Clarksville Machine Works, Inc.: *See*—
Cline, Jack, 4,270,789, Cl. 294-63.00A.
Claxton, Gerald L.; and Horn, Darrell C., to Up-Right, Inc. Vineyard trellis wire retention. 4,270,581, Cl. 140-57.000.
Cline, Jack, to Clarksville Machine Works, Inc. Airbag setter. 4,270,789, Cl. 294-63.00A.
Cloudy and Britton, Inc.: *See*—
Britton, Robert E., 4,270,598, Cl. 165-61.000.
CMI Corporation: *See*—
Swisher, George W., Jr.; Smith, Donald W.; and Teel, Larry W., 4,270,801, Cl. 299-1.000.
CNG Research Company: *See*—
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,270,937, Cl. 62-17.000.
Coach & Car Equipment Corporation: *See*—
Harder, Arthur J., Jr., 4,270,798, Cl. 297-417.000.
Coaltek Corporation: *See*—
Johnston, Robert T., 4,270,762, Cl. 277-59.000.
Coats, John H.: *See*—
Bergy, Malcolm E.; Coats, John H.; and Malik, Vedpal S., 4,271,266, Cl. 435-73.000.
Cobble, Milan H.; Hull, Wendell C.; and Hays, Richard A. Omni-directional compound paraboloid-hyperboloid radiation device. 4,270,844, Cl. 350-294.000.
Coggin, Charles H., Jr.; and Jones, John L., Jr., to Nitto Boseki Co. Ltd. Apparatus and method for drawing of glass fiber. 4,270,942, Cl. 65-11.00W.
Colberg, Richard A.; and Henry, William T., Jr., to Black & Decker Inc. Bevel angle setting means for a power tool apparatus. 4,270,427, Cl. 83-473.000.
Colberg, Richard A., to Black & Decker Inc. Kerf guide and cautionary marker for a power driven tool. 4,270,428, Cl. 83-477.200.
Coleman, Denis; and Koroscil, Anthony, to American Cyanamid Company. Hydrophilic acrylonitrile polymers for melt-spinning. 4,271,056, Cl. 260-29.6AN.
Collins Industries, Inc.: *See*—
Karkau, Lawrence E., 4,270,630, Cl. 187-9.00R.
Collins, Paul W.; and Pappo, Raphael, to G. D. Searle & Co. 4,5-Unsaturated prostanoic acid derivatives. 4,271,314, Cl. 560-121.000.
Colt Industries Operating Corp.: *See*—
Sciotti, Robert; and Dougherty, Michael, 4,270,504, Cl. 123-520.000.
Columbus, Richard L., to Eastman Kodak Company. Capillary transport device having connected transport zones. 4,271,119, Cl. 422-50.000.
Combustion Engineering, Inc.: *See*—
Bevilacqua, Frank, 4,270,979, Cl. 176-78.000.
Blaskowski, Henry J., 4,270,493, Cl. 122-7.00R.
Mabery, Thomas L.; and Jackson, Francis B., 4,270,690, Cl. 228-173.00F.
Compagnie Francaise des Isolants: *See*—
Perelmuter, Michel, 4,271,329, Cl. 174-84.00R.
Compagnie Francaise des Petroles: *See*—
Herbreteau, Alain M., 4,271,226, Cl. 428-220.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull: *See*—
Droux, M. Jacques; and Cardot, Claude R., 4,271,522, Cl. 371-57.000.
Giraud, Georges J. L., 4,271,482, Cl. 364-900.000.
Vinot, Daniel, 4,271,480, Cl. 364-900.000.
Comparetto, John E. Dental articulator. 4,270,901, Cl. 433-54.000.
Compton, Leslie E.: *See*—
Stover, Carole S.; Compton, Leslie E.; and Youngerman, Eugene G., 4,271,009, Cl. 208-254.00R.
Compton, Robert. Firearms. 4,270,294, Cl. 42-24.000.
Computer Microfilm International Corporation: *See*—
O'Brien, Gerald E., 4,271,430, Cl. 358-102.000.

Comstock, Wilford K. Transient voltage suppression system. 4,271,446, Cl. 361-56.000.

Condec Corporation: *See*—
Phipps, Arthur L., 4,271,107, Cl. 264-51.000.

Cone, Clendon W. Gluing machine. 4,270,967, Cl. 156-299.000.

Connell, John M., to Foster Wheeler Energy Corporation. Tube support structure for a fluidized bed heat exchanger. 4,270,599, Cl. 165-104.160.

Conner, William R., Jr., to Kellwood Company. Four-point suspensions. 4,270,718, Cl. 248-188.300.

Connolly, James B.: *See*—
Widdowson, Richard E.; Connolly, James B.; Schlotterbeck, Earl S.; and Livesay, J. D., 4,270,934, Cl. 55-316.000.

Conoco, Inc.: *See*—
Kennedy, Eugene F.; and Leach, Bruce E., 4,271,138, Cl. 423-462.000.

Conrad, Jens; Upadek, Horst; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Hydrogenated indenopyrans and their use in aromatic compositions. 4,271,047, Cl. 252-522.00R.

Conrad, Lucas J.; and White, Jackie L., to R. J. Reynolds Tobacco Company. Process and apparatus for expanding tobacco. 4,270,553, Cl. 131-291.000.

Control Process, Inc.: *See*—
Groleau, Rodney J., 4,271,106, Cl. 264-40.500.

Cook, Robert S.: *See*—
Mason, Leslie F. A.; Cook, Robert S.; Kilcast, David; Schellenberg, Matthias; and Chylewski, Christoph, 4,271,254, Cl. 430-239.000.

Coombes, Daniel J.; and Sangster, John H., to Motorola, Inc. Synchronizing technique for an error correcting digital transmission system. 4,271,520, Cl. 371-42.000.

Coon, Delbert L., to Dow Corning Corporation. Method for releasing frozen water. 4,271,215, Cl. 427-387.000.

Copeland, John A., to Bell Telephone Laboratories, Incorporated. Discriminator threshold level control circuit for a digital transmission system. 4,271,536, Cl. 455-619.000.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Elastoplastic compositions of cured diene rubber and polypropylene. 4,271,049, Cl. 260-4.00R.

Corbyn, Terence E.: *See*—
Baldwin, John L. E.; and Corbyn, Terence E., 4,271,483, Cl. 364-900.000.

Cornelius, Gerhard: *See*—
Supp, Emil; Jockel, Heinz; Cornelius, Gerhard; and Marschner, Friedmann, 4,271,086, Cl. 518-704.000.

Cornell Research Foundation, Inc.: *See*—
Miyata, Teruo; Rubin, Albert L.; and Stenzel, Kurt H., 4,271,070, Cl. 260-123.700.

Cornell, William D. Recovery and demodulation of a pulse width modulation encoded signal recorded on magnetic tape. 4,271,438, Cl. 360-32.000.

Corning Glass Works: *See*—
Gulati, Suresh T.; and Hagy, Henry E., 4,270,380, Cl. 72-467.000.
Palmer, Wilbur C.; and Rusby, Frank L., 4,271,345, Cl. 219-10.790.

Corrigan, Charles E., to Garrett Corporation, The. Laminated airfoil. 4,270,883, Cl. 416-97.00A.

Cossement, Eric: *See*—
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,172, Cl. 424-267.000.
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,173, Cl. 424-267.000.

Cottrill, Compton J.: *See*—
Gill, Donald H.; MacRae, Joseph A.; and Cottrill, Compton J., 4,270,591, Cl. 411-112.000.

Coulter, James L.; and Lorenz, Harald H., to General Motors Corporation. Automatic brake adjuster with automatically adjusted steady point. 4,270,633, Cl. 188-79.5GC.

Coursant, Roger H.: *See*—
Perilhou, Jean R.; and Coursant, Roger H., 4,270,546, Cl. 128-660.000.

Courtis, Thomas M.; and Donelson, Carl E., to Red Lodge Manufacturing Company. Gate assembly. 4,270,312, Cl. 49-385.000.

Coward, Michael D., to Georgetown Steel Corporation. Shroud with replaceable extension. 4,270,595, Cl. 164-415.000.

Cox, Jack R. Animal leash. 4,270,491, Cl. 119-109.000.

Crampton, Charles P., to Hamilton Tool Company. Forward numbering or underlap sheet delivery. 4,270,743, Cl. 270-58.000.

Crawford, Donald G., to Rockwell International Corporation. LCD Data processor driver and method. 4,271,410, Cl. 340-765.000.

Craycraft, Donald G.; Lockwood, George C.; and Donaldson, Darrel D., to NCR Corporation. Static volatile/non-volatile ram cell. 4,271,487, Cl. 365-189.000.

Cresap, Wesley L.; and Myers, Alan W., to Textron, Inc. Helicopter landing gear with crosstube pivot. 4,270,711, Cl. 244-17.170.

Cricchio, Renato, to Gruppo Lepetit S.p.A. Water soluble hydrazones of 3-formylrifamycin SV, antibacterial compositions thereof and method of use thereof. 4,271,155, Cl. 424-200.000.

Cristiani, Athos; and Gherardi, Gianluigi, to CIR S.p.A. Divisione Sasib. Device for the high speed feeding of rod-like articles. 4,270,670, Cl. 221-211.000.

Crooke, Stanley T.; and Galvan, Louis. Diagnostic method for detecting cancer. 4,270,924, Cl. 23-230.00B.

Crosby, David. Portable paper roll breaking machine. 4,270,683, Cl. 225-103.000.

Croset, Michel; and Velasco, Gonzalo, to Thomson-CSF. Electrochemical sensor for measuring relative concentrations of reactive species in a fluid mixture. 4,271,000, Cl. 204-195.00S.

Cross, Michael A., to Westinghouse Electric Corp. Directional optical fiber signal tapping assembly. 4,270,839, Cl. 350-96.150.

Crouse, Allen G., to Rockwell International Corporation. Method for controlled doping semiconductor material with highly volatile dopant. 4,270,972, Cl. 156-605.000.

Crowley, Francis X. Concrete tank. 4,270,323, Cl. 52-224.000.

Crowley, George C., to Sunbeam Corporation. Blanket wire utilizing positive temperature coefficient resistance heater. 4,271,350, Cl. 219-549.000.

Cunningham, Hugh; and Raetzsch, Carl W., to PPG Industries, Inc. Synthetic separator electrolytic cell. 4,271,004, Cl. 204-266.000.

Curotto, Richard L., to Stutz Motor Car of America, Inc. Convertible seat and storage device for automobiles. 4,270,790, Cl. 296-37.160.

Curry, Robert E.; Simonsen, Michael G.; and Schwartz, Eric D., to Bio-Rad Laboratories, Inc. Automated system for performing fluorescent immunoassays. 4,271,123, Cl. 422-64.000.

Curtis, Westley F.: *See*—
Baker, Judd O.; O'Brien, Jerome J.; Curtis, Westley F.; and Varney, Frederick M., 4,270,479, Cl. 114-240.00A.

Cywinski, Norbert F., to El Paso Products Company. Treatment of waste stream from adipic acid manufacture. 4,271,315, Cl. 560-204.000.

D'Addieco, Alfred A., to Du Pont de Nemours, E. I., and Company. Air fireable end termination compositions for multilayer capacitors based on nickel borides. 4,271,236, Cl. 428-426.000.

Dag, Stefan A.: *See*—
Laehy, Peter; and Dag, Stefan A., 4,270,873, Cl. 404-10.000.

Dagostino, Thomas P.; and Navarro, Luis J., to Tektronix, Inc. Waveform storage system. 4,271,486, Cl. 365-45.000.

Dahl, Birger, to Borregaard Industries Limited. Process for controlling hemicellulose concentration during the mercerization of cellulose. 4,270,914, Cl. 8-125.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Mizuno, Shogo; Suzuki, Takao; Kawasaki, Sadanobu; and Takeda, Hideichiro, 4,271,224, Cl. 428-207.000.

Dai Nippon Printing Co. Ltd.: *See*—
Cho, Kenji; Takamizawa, Minoru; and Inoue, Yoshio, 4,271,255, Cl. 430-253.000.

Daido Tokushuko Kabushiki Kaisha: *See*—
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,270,950, Cl. 75-126.00L.
Matsumoto, Masahiro; Kawate, Kenji; and Jinnouchi, Hidenobu, 4,270,959, Cl. 148-153.000.

Dailey Oil Tools, Inc.: *See*—
Lawrence, James D., 4,270,620, Cl. 175-322.000.

Daimler-Benz Aktiengesellschaft: *See*—
Niemann, Klaus; Wulf, Helmut; and Hauck, Peter, 4,270,405, Cl. 74-499.000.
Schaling, Wolfgang, 4,271,388, Cl. 324-51.000.

Dainippon Ink & Chemicals, Inc.: *See*—
Maeda, Hiroshi; Ariga, Nagao; Oikawa, Hiroshi; and Tominaga, Hidemitsu, 4,271,079, Cl. 260-346.300.

Daiwa Can Company, Limited: *See*—
Shimizu, Hiromichi, 4,271,216, Cl. 427-428.000.

Dalia, Salvatore A. Louver lock. 4,270,313, Cl. 49-403.000.

Danchin, Maxime, to Merlin Gerin. Gas-tight molded casing for an electrical apparatus. 4,271,343, Cl. 200-304.000.

Dandia, Ghulam M. Construction toy. 4,270,302, Cl. 46-19.000.

Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, to Institut Francais du Petrole. Process for producing gasoline of high octane number, in particular lead-free gasoline. 4,270,929, Cl. 44-56.000.

Dangeleit, Siegfried; and Neumann, Klaus, to DeMag Aktiengesellschaft. Casting ladle mounting for steel strand casting plants. 4,270,738, Cl. 266-99.000.

Daniel, Jean-Claude; Grossoleil, Jacques; and Roullet, Robert, to Rhone-Poulenc Industries. Process for preparing an aqueous latex binder for manufacturing nonwovens employing ultrafiltration to form a latex having low hydrosolubles. 4,271,055, Cl. 260-29.6TA.

Danne, Ulrich W.: *See*—
Thomas, Alfred W.; and Danne, Ulrich W., 4,270,353, Cl. 60-547.00R.

Dardaine, Edgar, to E. P. Remy et Cie. Method of automatic packaging of materials in containers and machine for carrying out the said method. 4,270,335, Cl. 53-411.000.

daSilva, Jose T. Combine harvester. 4,270,550, Cl. 130-27.00T.

Data Card Corporation: *See*—
LaManna, Richard J.; Drillick, Jacob H.; and Polad, Michael D., 4,271,012, Cl. 209-653.000.

Data 100 Corporation: *See*—
Severson, Verne L.; and Tomfohrde, Charles E., 4,271,403, Cl. 340-147.00C.

Davidson, Robert. Gear teeth. 4,270,401, Cl. 74-462.000.

Davies, David A., to Automotive Products Limited. Friction clutch driven plates. 4,270,640, Cl. 192-70.140.

Davis, Odie R. S.: *See*—
Hendrickson, James D.; White, Pat M.; Davis, Odie R. S.; Workman, Nolan M.; Baker, Eugene E.; and Szarka, David D., 4,270,608, Cl. 166-278.000.

Dawson, Lindsay G., to Rolls-Royce Limited. Fuel control systems for gas turbine engines. 4,270,346, Cl. 60-243.000.

Dayvolt, Bradley H., to Eastman Kodak Company. Process for recovering cellulose ester fines. 4,271,291, Cl. 536-65.000.

Deborah Fluidised Combustion Limited: *See*—
Robinson, Edwin; and Buckle, David, 4,270,468, Cl. 110-245.000.
Defibrator AB: *See*—
Sandstrom, Ake O.; Falk, Bo G.; and Bystedt, H. S. Ingemar, 4,270,976, Cl. 162-26.000.
de Grijs, Johan C.: *See*—
Mahdjuri, Faramarz; Asselman, George A. A.; and de Grijs, Johan C., 4,270,520, Cl. 126-433.000.
De Groff, James T.: *See*—
Feldman, Martin L.; and De Groff, James T., 4,271,065, Cl. 260-40.00R.
Degussa Aktiengesellschaft: *See*—
Hrovat, Milan; Huschka, Hans; and Rachor, Lothar, 4,271,102, Cl. 264-0.500.
Deigner, Paul: *See*—
Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.
De Labbey, Arnaud: *See*—
Bore, Pierre; and De Labbey, Arnaud, 4,270,919, Cl. 23-230.00B.
Della Torre, Arturo: *See*—
Melloni, Piero; Della Torre, Arturo; Carniel, Giovanni C.; and Rossi, Alessandro, 4,271,160, Cl. 424-248.540.
DeLong, Donald C., to Eli Lilly and Company. Antiviral combinations. 4,271,162, Cl. 424-250.000.
DeMag Aktiengesellschaft: *See*—
Dangeleit, Siegfried; and Neumann, Klaus, 4,270,738, Cl. 266-99.000.
Demaray, David E. Recording instrument to measure microbal gas production. 4,270,381, Cl. 73-19.000.
de Mets, Albert; and Neubauer, Harry, to Bison-Werke, Bahre & Greten GmbH & Co. KG. Method for the manufacture of particle board. 4,271,105, Cl. 264-26.000.
Deneau, Myron E.: *See*—
Moore, Henry J., Jr.; and Deneau, Myron E., 4,270,894, Cl. 431-20.000.
Deneke, Ulfert; Stahl, Peter; and Schneider, Walter, to Boehringer Mannheim GmbH. Method and reagent for the determination of glutamate-oxalacetate transaminase and glutamate-pyruvate transaminase. 4,271,265, Cl. 435-16.000.
Denny, Dann W., to General Electric Company. Thermostat and circuit. 4,270,597, Cl. 165-27.000.
Denny, Dann W., to General Electric Company. Cradle assembly for use in a thermostat. 4,271,400, Cl. 337-380.000.
Densmore, Neal W., to Joy Manufacturing Company. Conveyor feed apparatus. 4,270,653, Cl. 198-554.000.
Densow, Ulrich O., to Canadian Fram Limited. Castellated spool for electromagnetic band clutch. 4,270,642, Cl. 192-84.00T.
Denton, Dennis N.; and Benjamin, Martin E., to Garlock Inc. Combination thrust washer and seal article, apparatus and method. 4,270,759, Cl. 277-1.000.
Denzel, Theodor; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. Imidazole derivatives of 7-[(2-amino-4-thiazolyl)-oximino] cephalosporins. 4,271,157, Cl. 424-246.000.
DePalma, Vito A.; Meyer, Anne E.; and Ashby, Albert K., to Calspan Corporation. Method and apparatus for coating the grooved bottoms of substrates. 4,271,209, Cl. 427-58.000.
DePue, Harold F., to Hydraulic Energy Company. Cable racking system. 4,270,733, Cl. 254-93.00R.
DeRoeck, Carrie P.: *See*—
Spencer, Patricia J.; DeRoeck, Carrie P.; and DeRoeck, Robert L., 4,271,011, Cl. 209-236.000.
DeRoeck, Robert L.: *See*—
Spencer, Patricia J.; DeRoeck, Carrie P.; and DeRoeck, Robert L., 4,271,011, Cl. 209-236.000.
De Roo, Pierre R.: *See*—
Gilliams, Yvan K.; and De Roo, Pierre R., 4,271,249, Cl. 430-101.000.
Deschler, Gerhard; Gebhardt, Hans; and Wittmann, Dieter, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Cams for actuating the valves of a reciprocating machine. 4,270,407, Cl. 74-569.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Noise generator for a polyphonic tone synthesizer. 4,270,430, Cl. 84-1.230.
Deutsche Gold-und Silber Scheideanstalt vormals Roessler: *See*—
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,271,044, Cl. 252-462.000.
Hentsche, Klaus; Bittner, Friedrich; and Schreyer, Gerd, 4,271,297, Cl. 544-190.000.
Hentschel, Klaus; Bittner, Friedrich; and Sohreyer, Gerd, 4,271,298, Cl. 544-190.000.
Hentschel, Klaus; and Bittner, Friedrich, 4,271,299, Cl. 544-218.000.
Wuest, Willi; Just, Guenther; and Peters, Bernd W., 4,271,135, Cl. 423-329.000.
Devine, Guy E.: *See*—
Menot, Robert; Willard, Robert E.; Griem, Paul D.; and Devine, Guy E., 4,271,505, Cl. 370-85.000.
de Wied, David; and Greven, Hendrik M., to Akzo N.V. Psycho-pharmacological peptides. 4,271,152, Cl. 424-177.000.
Diamond Crystal Salt Co.: *See*—
Leverenz, Melvin E., 4,270,486, Cl. 118-679.000.
Diamond Shamrock Corporation: *See*—
Goodridge, Francis; and Plimley, Raymond E., 4,270,995, Cl. 204-79.000.
Dick, Heinz, to Ford Motor Company. Adjusting apparatus for motor vehicle headlamps. 4,271,456, Cl. 362-66.000.
Dickakian, Ghazi, to Exxon Research and Engineering Company. Process for production of carbon artifact precursor. 4,271,006, Cl. 208-40.000.
Dickinson, John M. C.: *See*—
Stewart, David B.; Stewart, William R.; and Dickinson, John M. C., 4,270,245, Cl. 19-85.000.
Dickinson, Thorn W.; McLarty, Daniel R.; and Lyons, Thomas F., Jr., to Textron Inc. Traction-drive transmission with hydraulic control. 4,270,415, Cl. 74-867.000.
Dieck, Ronald L., to General Electric Company. Modified polyester compositions. 4,271,064, Cl. 260-40.00R.
Diemert, Paul M.: *See*—
Reed, Frank A., deceased; and Diemert, Paul M., executor, 4,270,575, Cl. 137-625.690.
Diemert, Paul M., executor: *See*—
Reed, Frank A., deceased; and Diemert, Paul M., executor, 4,270,575, Cl. 137-625.690.
Difflipp, Kurt; and Greiner, Harry M., to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for washing cylinders on printing presses. 4,270,450, Cl. 101-142.000.
DiGiulio, Adolph V.; and Bauer, Jack N., to Arco Polymers, Inc. Fire-retardant monocarboxlylic acid amide copolymers. 4,271,271, Cl. 521-82.000.
Diller, Werner; Drope, Eckard; Ellendt, Gunther; and Reichold, Ernst, to Bayer Aktiengesellschaft. Plaque for measuring the dose of reactive gases. 4,271,121, Cl. 422-56.000.
DiMeo, Frank N., to Litton Systems, Inc. Double air gap printed circuit rotor. 4,271,370, Cl. 310-266.000.
Discovision Associates: *See*—
Yardy, Raymond, 4,271,334, Cl. 369-41.000.
Dittrick, John W.: *See*—
Willis, Brian J.; and Dittrick, John W., 4,271,045, Cl. 252-522.00R.
Dixon, Jack B.; and Hall, Randall C., to Purdue Research Foundation. Detection unit with solute detector and transport system. 4,271,022, Cl. 210-198.200.
DLM, Inc.: *See*—
Eckert, Ronald P., 4,270,290, Cl. 40-389.000.
Dlugos, Daniel F.; and Harenberg, Donald D., to Pitney Bowes Inc.; and Rockwell Intl. Corp. Serial data bus for use in a multiprocessor parcel postage metering system. 4,271,470, Cl. 364-466.000.
Doenges, Gerhard: *See*—
Herwig, Thomas; and Doenges, Gerhard, 4,271,359, Cl. 250-347.000.
Dold, Erwin: *See*—
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,271,044, Cl. 252-462.000.
Dome Petroleum Limited: *See*—
O'Rourke, J. Cam; Pilkington, G. Roger; and Bercha, Frank G., 4,270,476, Cl. 114-40.000.
Dommer, Hans-Martin; and Kurz, Otto, to L. Schuler GmbH. Intermittent operation arrangement in a notching machine. 4,270,413, Cl. 74-828.000.
Dommes, Werner: *See*—
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Drake, Dale E., to Enertherm, Inc. Low mass flow waste fuel incinerator. 4,270,467, Cl. 110-216.000.
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Drew, Kenneth C., to McCreary Tire & Rubber Company. Bladder holder assembly for tire making machine. 4,270,605, Cl. 156-401.000.
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Driscoll, Michael J. Table easel. 4,270,462, Cl. 108-32.000.
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Dynamit Nobel Aktiengesellschaft: *See*—
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Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.
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Peters, Philip H., 4,271,462, Cl. 363-84.000.
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Ward, John S., 4,271,166, Cl. 424-263.000.
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Ellis, James F. Air recycling apparatus for drying a textile web. 4,270,283, Cl. 34-212.000.
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Enertherm, Inc.: *See*—
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Ennis, George T., to N/S Car Wash Enterprises, Inc. Method for brushing vehicles. 4,270,958, Cl. 134-6.000.
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Kelly, Earl M., 4,271,027, Cl. 210-609.000.
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Erickson, David L.; and Kitts, Leonard W., to Interface Design Group, Inc. Furniture having prestressed fabric panels. 4,270,816, Cl. 312-3.000.
Erickson, Milton W., to Dover Corporation. Electrical clamp. 4,270,824, Cl. 339-15.000.
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Evans, Russell W.: *See*—
Singer, Alfred R. E.; and Evans, Russell W., 4,270,383, Cl. 73-82.000.
Ewing, Bruce A., to General Motors Corporation. Manufacture of composite turbine rotors. 4,270,256, Cl. 29-156.80R.
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Aid, James D.; and Lee, Kyu H., 4,271,014, Cl. 210-86.000.
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Dickakian, Ghazi, 4,271,006, Cl. 208-40.000.
McVicker, Gary B., 4,271,302, Cl. 546-2.000.
Stephens, Richard B., 4,270,517, Cl. 126-422.000.
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Farnam, Robert G., 4,270,785, Cl. 293-1.000.
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Gattys, Franz-Josef, 4,271,034, Cl. 252-301.10W.
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Sandstrom, Ake O.; Falk, Bo G.; and Bystedt, H. S. Ingemar, 4,270,976, Cl. 162-26.000.
Fallows, John, to Global Manufacturing, Inc. Vibrator. 4,270,396, Cl. 74-87.000.
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Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., to Allis-Chalmers Corporation. Roller grate material bed transporting and heat exchange apparatus. 4,270,899, Cl. 432-58.000.
Faunce, Frank R. Apparatus for manufacturing dental laminant veneers. 4,270,892, Cl. 425-388.000.
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Wossner, Felix, 4,270,635, Cl. 188-322.000.
Filliman, Paul D., to Magnavox Company, The. Apparatus for converting digital data into a video signal for displaying characters on a television receiver. 4,271,409, Cl. 340-703.000.
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Fink, Helmuth; and Van der Gucht, Karel, to Siemens Aktiengesellschaft. Method and apparatus for measuring the transmission characteristics in electrical communication systems. 4,271,478, Cl. 364-580.000.
Fioravanti, Eugene, to Huyck Corporation. Positive pressure felt dewatering and cleaning device and method. 4,270,978, Cl. 162-199.000.
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Siekmeier, David A.; Andersen, Glen L.; Zimmerer, Arthur L., deceased; First National Bank & Trust Co., joint executor; Zimmerer, Bernadette, joint executor; and Zimmerer, William P., 4,270,699, Cl. 239-184.000.
Fischer, Gerhard M. Support device for an upstanding plant support rod in a plant pot. 4,270,310, Cl. 47-70.000.
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Fischer, Ronald H.: *See*—
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Fisher, Charles K., to TRW Inc. Releasable hose fitting. 4,270,777, Cl. 285-242.000.
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Fisher, Thomas E. Method and means of insulating a building foundation wall. 4,270,321, Cl. 52-97.000.
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Fjallbrant, Tore. Device for converting a non-uniformly sampled signal with short-time spectrum to a uniformly sampled signal. 4,271,500, Cl. 370-23.000.
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Flaskett, Peter J., to Rohm and Haas Company. Method and apparatus for reinforcing a layer of plastics material. 4,270,964, Cl. 156-228.000.
Flaum, Dennis M. Modular chair apparatus. 4,270,799, Cl. 297-440.000.

Fletcher, Wade D.; McMahon, Edward H.; and Grady, Dwight D., to Sonoco Products Company. Method of forming a flush-sided container. 4,270,475, Cl. 113-120.00K.
Flora, Laurence P., to Burroughs Corporation. Three-level, self-clocked data transmission system. 4,271,526, Cl. 375-17.000.
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Eastburg, Paul H., 4,271,181, Cl. 424-276.000.
Fodor, Eben V. Continuously variable traction drive transmission. 4,270,400, Cl. 74-194.000.
Fong, Jaan J., to Minnesota Mining and Manufacturing Company. Acidic electroplating baths with novel surfactants. 4,270,990, Cl. 204-55.00R.
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Dick, Heinz, 4,271,456, Cl. 362-66.000.
Donakowski, William A.; and Morgan, John R., 4,270,957, Cl. 134-2.000.
Gable, Melvin G.; Sherman, Richard H.; and Jeyabalan, Vadivelu, 4,271,507, Cl. 370-94.000.
Gable, Melvin G., 4,271,523, Cl. 371-57.000.
Giardini, Dante S., 4,270,643, Cl. 192-103.00C.
Savell, Charles L., 4,270,787, Cl. 293-121.000.
Suh, Sang K.; and Hall, Daniel W., 4,270,951, Cl. 75-200.000.
Forster, Heinz; Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Stilbene compounds and insecticidal/acaricidal compositions. 4,271,186, Cl. 424-304.000.
Forster, Manfred; Linke, Adolf; and Geidies, Ulrich, to Krupp-Koppers GmbH. Process for monitoring the flow of fine grained solid fuel for use in gasifiers. 4,270,558, Cl. 137-2.000.
Forsyth, Robert J., to North American Industries, Inc. Drop marker. 4,270,482, Cl. 116-209.000.
Foster, Arthur M.: *See*—
Tang, David Y.; and Foster, Arthur M., 4,271,319, Cl. 568-312.000.
Foster, Berry W., to Garrett Corporation, The. Heat exchanger. 4,270,602, Cl. 165-167.000.
Foster, Richard P.; and Brodin, Gregory C., to Hollingsworth & Vose Company. Sheet material containing exfoliated vermiculite. 4,271,228, Cl. 428-281.000.
Foster Wheeler Energy Corporation: *See*—
Connell, John M., 4,270,599, Cl. 165-104.160.
Vatsky, Joel, 4,270,895, Cl. 431-183.000.
Four Star Corporation: *See*—
Ingram, Charles E., 4,270,681, Cl. 224-321.000.
Foxboro Company, The: *See*—
Menot, Robert; Willard, Robert E.; Griem, Paul D.; and Devine, Guy E., 4,271,505, Cl. 370-85.000.
Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, to Siemens Aktiengesellschaft. Device for the pre-programmable infusion of liquids. 4,270,532, Cl. 128-213.00R.
Frankenberger, Horst: *See*—
Baum, Marcel; Frankenberger, Horst; and Schwanbom, Erik, 4,270,530, Cl. 128-204.250.
Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Oellerer, Friedrich, 4,270,456, Cl. 104-3.000.
Franzmann, Giselher; and Hulsmann, Hans-Leo, to Dynamit Nobel Aktiengesellschaft. Regeneration of an enzyme immobilizate. 4,271,269, Cl. 435-176.000.
Fraser & Chalmers Equipment Limited: *See*—
Green, Basil W., 4,270,676, Cl. 222-485.000.
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, to Deutsche Gold-und Silber Scheideanstalt vormals Roessler. Carrier matrix for catalysts and process for its production. 4,271,044, Cl. 252-462.000.
Freedom, John. Clasp. 4,270,247, Cl. 24-30.50R.
Freigh Bonallack Limited: *See*—
Braithwaite, Albert A.; and Smith, Tony S., 4,271,238, Cl. 428-542.000.
Frelund, Arthur R., to General Motors Corporation. Diesel engine precombustion chambers. 4,270,499, Cl. 123-293.000.
Fretwell, Jack W., Jr. Device for the accelerated launching of light sails. 4,270,477, Cl. 114-104.000.
Freudenstein, Ferdinand; and Maki, E. Roland, to General Motors Corporation. Variable displacement piston engine. 4,270,495, Cl. 123-54.00B.
Friedel, Rudolf: *See*—
Geldner, Ernst; Friedel, Rudolf; and Haberrecker, Klaus, 4,271,372, Cl. 313-330.000.
Friello, Dominick R.: *See*—
Cherukuri, Subraman R.; Friello, Dominick R.; Jewell, Walter; and Mackay, Donald A. M., 4,271,198, Cl. 426-3.000.
Cherukuri, Subraman R.; Vink, Walter; Friello, Dominick R.; and Mackay, Donald A. M., 4,271,199, Cl. 426-5.000.
Hopkins, Walter; Friello, Dominick R.; Cherukuri, Subraman R.; Roy, Raymond L.; and Mackay, Donald A. M., 4,271,197, Cl. 426-3.000.
Frieser, Josef: *See*—
Trabitzsch, Hans; Frieser, Josef; Koschik, Achim; and Plainer, Hermann, 4,271,058, Cl. 260-29.60M.
Frischkorn, Hans: *See*—
Uhl, Klaus; Frischkorn, Hans; and Martini, Thomas, 4,271,036, Cl. 252-301.230.
Frischmuth, Robert W., to Occidental Research Corporation. Desulfurization of carbonaceous materials. 4,270,928, Cl. 44-1.0SR.
Fritzsche Dodge & Olcott, Inc.: *See*—
Willis, Brian J.; and Dittrick, John W., 4,271,046, Cl. 252-522.00R.
Fuchs, Rainer: *See*—
Forster, Heinz; Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,271,186, Cl. 424-304.000.
Fuji Latex Co., Ltd.: *See*—
Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, 4,270,541, Cl. 128-344.000.
Fuji Photo Film Co., Ltd.: *See*—
Aotani, Yoshimasa; Misu, Hiroshi; and Nagashima, Akira, 4,271,251, Cl. 430-195.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,271,252, Cl. 430-216.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,271,253, Cl. 430-216.000.
Kido, Keishiro; Wada, Minoru; and Ikeda, Tomoaki, 4,271,256, Cl. 430-253.000.
Kondo, Asaji; Arai, Fuminori; and Kitajima, Masao, 4,270,920, Cl. 23-230.00B.
Murakoshi, Makoto; and Yoshizawa, Tamotu, 4,270,404, Cl. 74-479.000.
Murakoshi, Makoto; and Oosaka, Shigenori, 4,271,415, Cl. 346-108.000.
Sato, Masamichi; and Matsumoto, Kenji, 4,271,246, Cl. 430-7.000.
Fuji Photo Optical Co., Ltd.: *See*—
Hosono, Tsutomu, 4,271,375, Cl. 315-241.00P.
Fuji Xerox Co., Ltd.: *See*—
Takenouchi, Mutsuo; Tomiyama, Shunsuke; and Ozawa, Takashi, 4,271,435, Cl. 358-213.000.
Fujii, Masayuki. Hydropneumatic suspension system. 4,270,771, Cl. 280-707.000.
Fujii, Toshikazu: *See*—
Tanaka, Itsuya; and Fujii, Toshikazu, 4,271,217, Cl. 428-96.000.
Fujikawa, Kanichi: *See*—
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,270,948, Cl. 71-100.000.
Fujiki, Norio: *See*—
Fukuhara, Hiroshige; and Fujiki, Norio, 4,271,535, Cl. 455-309.000.
Fujimura, Noriaki: *See*—
Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, 4,271,513, Cl. 371-22.000.
Fujitsu Limited: *See*—
Inayoshi, Katsuyuki; and Miyao, Kazutoshi, 4,271,424, Cl. 357-67.000.
Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, 4,271,513, Cl. 371-22.000.
Fujiwara, Akiko; and Masuda, Setsuko, to Hoffmann-La Roche Inc. Process for producing D-arabitol. 4,271,268, Cl. 435-158.000.
Fujiwara, Shinji: *See*—
Chikamura, Takao; Ogawa, Kazufumi; Terui, Yasuaki; Fujiwara, Shinji; and Fukai, Masakazu, 4,271,420, Cl. 357-30.000.
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, to Daido Tokushuko Kabushiki Kaisha. Machinable ferrite stainless steels. 4,270,950, Cl. 75-126.00L.
Fukai, Masakazu: *See*—
Chikamura, Takao; Ogawa, Kazufumi; Terui, Yasuaki; Fujiwara, Shinji; and Fukai, Masakazu, 4,271,420, Cl. 357-30.000.
Fukazawa, Takao: *See*—
Isayama, Takuro; Takemoto, Takeshi; Sato, Tsutomu; and Fukazawa, Takao, 4,271,366, Cl. 307-591.000.
Fukuba, Akio; Morishita, Michio; Tanaka, Kenji; Nishi, Toshinobu; and Ouchi, Hideaki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas purification system for an internal combustion engine. 4,270,347, Cl. 60-276.000.
Fukuchi, Shigeki, to Metako Kigyo Co., Ltd. Bracket unit. 4,270,720, Cl. 248-269.000.
Fukuda, Masataro: *See*—
Toyoguchi, Yoshinori; Iijima, Takashi; and Fukuda, Masataro, 4,271,242, Cl. 429-194.000.
Fukuhara, Hiroshige; and Fujiki, Norio, to Nissan Motor Company, Limited. Noise eliminating system. 4,271,535, Cl. 455-309.000.
Fukunaga, Shoichi: *See*—
Kimata, Kei; and Fukunaga, Shoichi, 4,270,257, Cl. 29-157.10R.
Fukuzono, Hideki: *See*—
Nishimura, Hiromi; and Fukuzono, Hideki, 4,271,450, Cl. 361-155.000.
Fumagalli, Angelo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,271,183, Cl. 424-285.000.
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,271,184, Cl. 424-285.000.
Furihata, Hiroyuki, to Olympus Optical Co., Ltd. Suction control device for an endoscope. 4,270,525, Cl. 128-4.000.

Furuichi, Katsuhisa: *See*—
Hirato, Motoshiro; Kawagoe, Hazime; Abe, Kazuo; Sato, Tsuyoshi; Miyake, Yasuhiko; Nagai, Masahiro; Furuichi, Katsuhisa; and Shimojima, Kiyoshi, 4,270,373, Cl. 72-41.000.

Furuichi, Shuhei; and Nose, Takahiko, to Kabushiki Kaisha Morita Seisakusho. Driving system for an ultrasonic piezoelectric transducer. 4,271,371, Cl. 310-316.000.

Furukawa Denchi Kabushiki Kaisha: *See*—
Suzuki, Yuichi; and Sano, Ichiro, 4,271,245, Cl. 429-243.000.

Furukawa Denki Kogyo Kabushiki Kaisha: *See*—
Suzuki, Yuichi; and Sano, Ichiro, 4,271,245, Cl. 429-243.000.

Furuno Electric Co., Ltd.: *See*—
Minohara, Kiyomi; Sugiyama, Akira; Nakai, Hiroshi; Iida, Masajiro; Morimatsu, Hideharu; and Kobayashi, Yuzo, 4,271,490, Cl. 367-122.000.

Furusawa, Mitsuru; Yamamoto, Fumiichiro; and Yoshinaga, Makoto, to Olympus Optical Co., Ltd. Micromanipulator for a microscope. 4,270,838, Cl. 350-81.000.

Furuya, Nobuo: *See*—
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,271,208, Cl. 427-28.000.

Futaba Kinzoku Kogyo Kabushiki Kaisha: *See*—
Nishimura, Tamotsu, 4,270,781, Cl. 292-251.500.

G. D. Searle & Co.: *See*—
Behling, James R., 4,270,994, Cl. 204-78.000.
Collins, Paul W.; and Pappo, Raphael, 4,271,314, Cl. 560-121.000.

G., Enrique Bernal: *See*—
Anderson, Rogers H.; G., Enrique Bernal; and Chen, Di, 4,271,104, Cl. 264-1.500.

Gabano, Jean-Paul; and Broussely, Michel, to Saft-Societe des Accumulateurs Fixes et de Traction. High specific energy battery having an improved positive active material. 4,271,244, Cl. 429-197.000.

Gable, Melvin G.; Sherman, Richard H.; and Jeyabalan, Vadivelu, to Ford Motor Company. Communication broadcast channel interface. 4,271,507, Cl. 370-94.000.

Gable, Melvin G., to Ford Motor Company. Contention interference detection in data communication receiver. 4,271,523, Cl. 371-57.000.

Gabrysch, Gerd: *See*—
Hoffmann, Erwin; Krippl, Kurt; Kraft, Karl J.; Gabrysch, Gerd; and Redmer, Frank, 4,270,889, Cl. 425-115.000.

Gaetano, Ralph R., to Think, Inc. Permanently folded map in book form. 4,270,773, Cl. 283-34.000.

GAF Corporation: *See*—
Biranowski, Jerome B.; Lorenz, Donald H.; and Kantor, Simon W., 4,271,273, Cl. 521-110.000.

Gagneur, Klaus: *See*—
Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, 4,270,532, Cl. 128-213.00R.

Gagneux, Stephan A.: *See*—
Bogue, Beuford A.; and Gagneux, Stephan A., 4,270,535, Cl. 128-214.400.

Gaillard, Jean: *See*—
Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, 4,270,929, Cl. 44-56.000.

Gaiser, Conrad J. Hand cover. 4,270,228, Cl. 2-158.000.

Galbraith, Wiley E.; Kaufman, Arthur L.; and Klepper, Herbert, to Eltra Corporation. Electrophotographic apparatus for providing dry developed output from a typesetter. 4,270,859, Cl. 355-10.000.

Gall, Robert L., to United States of America, Energy. Coal-feeding mechanism for a fluidized bed combustion chamber. 4,270,469, Cl. 110-245.000.

Galletti, Alfonso, to Gi. Pi. S.n.c. di Galletti Alfonso & C. Filter unit for use in liquid purification apparatus. 4,271,019, Cl. 210-108.000.

Gallo, Mario: *See*—
Saner, Kaspar; Wirth, Johannes; and Gallo, Mario, 4,270,384, Cl. 73-862.590.

Galvan, Louis: *See*—
Crooke, Stanley T.; and Galvan, Louis, 4,270,924, Cl. 23-230.00B.

Galvez, Buenaventura B.: *See*—
Souhrada, Frank; and Galvez, Buenaventura B., 4,271,007, Cl. 208-48.00R.

Gamano, Kazuyuki: *See*—
Nishimura, Yutaka; and Gamano, Kazuyuki, 4,270,625, Cl. 180-291.000.

Game Time, Inc.: *See*—
Ray, Sunnie, 4,270,748, Cl. 272-56.50R.

Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., to Farmitalia Carlo Erba S.p.A. Bicyclic prostaglandins. 4,271,183, Cl. 424-285.000.

Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., to Farmitalia Carlo Erba S.p.A. Bicyclic prostaglandins. 4,271,184, Cl. 424-285.000.

Ganellin, Charon R.: *See*—
Durant, Graham J.; and Ganellin, Charon R., 4,271,169, Cl. 424-263.000.

Gange, Robert A.; and Marlowe, Frank J., to RCA Corporation. System for compensating for cathode variations in display devices utilizing line cathodes. 4,271,377, Cl. 315-366.000.

Garbis, Dennis: *See*—
Hill, Lawrence; Garbis, Dennis; and Heller, Robert, 4,271,235, Cl. 428-408.000.

Gardner, Nelson C.: *See*—
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,270,937, Cl. 62-17.000.

Garlock Inc.: *See*—
Bainard, Dean R.; and Benjamin, Martin, 4,270,442, Cl. 92-168.000.
Denton, Dennis N.; and Benjamin, Martin E., 4,270,759, Cl. 277-1.000.

Garrard, Bruce. Gas and liquid ad-mixing system. 4,271,097, Cl. 261-64.00D.

Garrett Corporation, The: *See*—
Corrigan, Charles E., 4,270,883, Cl. 416-97.00A.
Foster, Berry W., 4,270,602, Cl. 165-167.000.

Garter, Robert F.; Hamparian, Nshan; and Lee, Litton T., to General Motors Corporation. Insulated oil cooled piston assembly. 4,270,494, Cl. 123-41.350.

Gates, Robert L.: *See*—
Osborne, Norman A.; and Gates, Robert L., 4,270,393, Cl. 74-5.00F.

Gattys, Franz-Josef, to F. J. Gattys Ingenieurburo. Process of denitration of highly radio-active waste solutions. 4,271,034, Cl. 252-301.10W.

Gaudioso, Stephen L., to Xerox Corporation. Magnetic latent image toner material and process for its use in flash fusing developing. 4,271,248, Cl. 430-39.000.

Gauri, Kailash K., to Robugen GmbH Pharmazeutische Fabrik. Novel monophosphates. 4,271,153, Cl. 424-180.000.

Gavin, Bruce M., to Gavin, Bruce Malcolm; and Hubber, Nelson James. Electrified fence switching device. 4,270,735, Cl. 256-10.000.

Gavin, Bruce Malcolm: *See*—
Gavin, Bruce M., 4,270,735, Cl. 256-10.000.

Gearhart Owen Industries, Inc.: *See*—
Hallmark, Bobby J., 4,270,385, Cl. 73-155.000.

Gebhardt, Hans: *See*—
Deschler, Gerhard; Gebhardt, Hans; and Wittmann, Dieter, 4,270,407, Cl. 74-569.000.

Gebruder Junghans GmbH: *See*—
Scherzinger, Bernhard; and Flaig, Hans, 4,271,495, Cl. 368-75.000.
Wolber, Robert; and Maurer, Roland, 4,270,834, Cl. 339-147.00R.

Geidies, Ulrich: *See*—
Forster, Manfred; Linke, Adolf; and Geidies, Ulrich, 4,270,558, Cl. 137-2.000.

Geissmann, Robert. Spit roaster. 4,270,444, Cl. 99-421.00V.

Geitz, Gerhard: *See*—
Birzele, Paul; and Geitz, Gerhard, 4,271,518, Cl. 371-37.000.

Geldner, Ernst; Friedel, Rudolf; and Haberrecker, Klaus, to Siemens Aktiengesellschaft. Rotatable anode for an X-ray tube composed of a coated, porous body. 4,271,372, Cl. 313-330.000.

General Electric Company: *See*—
Adams, Norbert, 4,271,365, Cl. 250-551.000.
Bishop, James C.; and Patenaude, Raymond A., 4,270,436, Cl. 89-33.00R.
Borman, Willem F. H.; and Campbell, Richard W., 4,271,063, Cl. 260-40.00R.
Burns, Richard D., 4,271,368, Cl. 310-42.000.
Denny, Dann W., 4,270,597, Cl. 165-27.000.
Denny, Dann W., 4,271,400, Cl. 337-380.000.
Dieck, Ronald L., 4,271,064, Cl. 260-40.00R.
Hooke, John W.; and Pate, Paul E., 4,271,241, Cl. 429-54.000.
Howell, Edward K., 4,271,444, Cl. 361-48.000.
Howell, Edward K., 4,271,447, Cl. 361-93.000.
Kast, Howard B., 4,270,345, Cl. 60-39.28R.
Ohno, John M., 4,271,114, Cl. 264-114.000.
Rossi, Anthony J.; and Behringer, Donald F., 4,270,357, Cl. 60-660.000.
Thurston, George T., 4,270,828, Cl. 339-95.00R.

General Foods Corporation: *See*—
Fariel, Harry F.; Rudolph, Marvin J.; Hynson, Richard B.; Roy, Pradip K.; and Kleiner, Fredric, 4,271,206, Cl. 426-572.000.
Otto, Michael J.; and Ray, George C., 4,271,220, Cl. 428-134.000.

General Motors Corporation: *See*—
Coulter, James L.; and Lorenz, Harald H., 4,270,633, Cl. 188-79.5GC.
Ewing, Bruce A., 4,270,256, Cl. 29-156.80R.
Frelund, Arthur R., 4,270,499, Cl. 123-293.000.
Freudenstein, Ferdinand; and Maki, E. Roland, 4,270,495, Cl. 123-54.00B.
Garter, Robert F.; Hamparian, Nshan; and Lee, Litton T., 4,270,494, Cl. 123-41.350.
Gill, Donald H.; MacRae, Joseph A.; and Cottrill, Compton J., 4,270,591, Cl. 411-112.000.
Jessop, Michael E., 4,270,624, Cl. 180-287.000.
Kastura, John L.; and Stewart, William R., 4,271,402, Cl. 340-52.00F.
Lanzi, Ronald G.; and Vernia, Peter, 4,270,266, Cl. 29-875.000.
Mann, Gamdur S., 4,270,936, Cl. 55-520.000.
Mathieson, John N.; and Spranger, Roy C., 4,270,792, Cl. 296-93.000.
Page, Norman B.; and Bursott, Leslie W., 4,270,328, Cl. 52-511.000.
Pomerantz, Allen J., 4,270,503, Cl. 123-438.000.
Wagner, Douglas A., 4,270,408, Cl. 74-661.000.
Walters, L. Kirk; Judd, Richard K.; and Atkins, Terrance J., 4,271,094, Cl. 261-39.00B.
Widdowson, Richard E.; Connolly, James B.; Schlotterbeck, Earl S.; and Livesay, J. D., 4,270,934, Cl. 55-316.000.
Winberg, Robert F., 4,270,348, Cl. 60-323.000.
Yu, Mason K., 4,270,344, Cl. 60-39.16R.

George, Benjamin B., Jr., to Tivoli Industries, Inc. Decorative light tubing. 4,271,458, Cl. 362-236.000.

Georgeau, Phillip C., to Megaloid Chemical Corporation. Method of producing a pre-wet, dust-free form of asbestos short fibers. 4,271,115, Cl. 264-117.000.

Georgetown Steel Corporation: *See—*
Coward, Michael D., 4,270,595, Cl. 164-415.000.

Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., to Institute Po Mechanika I Biomechanika. Impulse-type sinking hydrant. 4,270,697, Cl. 239-99.000.

Gerth, Howard L.: *See—*
Robinson, Samuel C.; and Gerth, Howard L., 4,270,421, Cl. 82-21.00A.

Gertsch, Peter; and Imhof, Robert, to Maschinenfabrik Wifag. Ductor drive. 4,270,452, Cl. 101-148.000.

Gesellschaft zur Forderung der Forschung an der Eidgenossichen Technischen Hoschschule: *See—*
Hausmann, Werner A., 4,271,037, Cl. 252-359.00R.

Geyer, Hermann: *See—*
Steigerwald, Wolf-Erhard; Ambros, Peter; and Geyer, Hermann, 4,271,045, Cl. 252-511.000.

Gherardi, Gianluigi: *See—*
Cristiani, Athos; and Gherardi, Gianluigi, 4,270,670, Cl. 221-211.000.

Gi. Pi. S.n.c. di Galletti Alfonso & C.: *See—*
Galletti, Alfonso, 4,271,019, Cl. 210-108.000.

Giardini, Dante S., to Ford Motor Company. Acceleration responsive clutch. 4,270,643, Cl. 192-103.00C.

Gibbons, Michael G.: *See—*
Kehrman, Robert F.; Farstad, Arnold J.; Gibbons, Michael G.; and Swigert, David L., 4,271,407, Cl. 340-690.000.

Giel, Thomas H., to Mallinckrodt, Inc. Particulate lactose-starch hydrolysate based flavoring materials and method of producing same. 4,271,202, Cl. 426-96.000.

Gildea, Dennis M.; and Nota, Peter. Camera mount. 4,270,679, Cl. 224-181.000.

Gilden, Sheldon J.; and Robichaud, Robert H., to Texas Instruments Incorporated. Medical electrode having improved adherence characteristics. 4,270,544, Cl. 128-640.000.

Gill, Bernard J.; Siegal, Burton L.; and Goettsche, Randy P., to Kiwi Coders Corporation. Inker ring wheel. 4,270,454, Cl. 101-348.000.

Gill, Donald H.; MacRae, Joseph A.; and Cottrill, Compton J., to General Motors Corporation. Fastener assembly. 4,270,591, Cl. 411-112.000.

Gillette Company, The: *See—*
Jacobson, Chester F., 4,270,268, Cl. 30-47.000.

Gilliams, Yvan K.; and De Roo, Pierre R., to AGFA-GEVAERT N.V. Composition of matter and method for electrostatic image development. 4,271,249, Cl. 430-101.000.

Gilson, Alan P.: *See—*
Siryj, Bohdan W.; and Gilson, Alan P., 4,271,489, Cl. 369-38.000.

Gimbel, R. Keith. Framed picture holder. 4,270,287, Cl. 40-152.000.

Giner, Jose D.: *See—*
United States of America, National Aeronautics and Space Administration; Giner, Jose D.; and Cahill, Kathleen J., 4,270,984, Cl. 204-2.100.

Giovannetti, Sergio; Barsotti, Giuliano; and Donati, Giovanni, to Tecnodial, S.P.A. Spiral-shaped dialysis and ultrafilter device, especially for extracorporeal haemodialysis. 4,271,023, Cl. 210-321.300.

Girard, Yves: *See—*
Atkinson, Joseph G.; Rooney, Clarence S.; Girard, Yves; and Engelhardt, Edward L., 4,271,187, Cl. 424-309.000.

Giraud, Georges J. L., to Compagnie Internationale pour l'Informatique -CII-Honeywell Bull. Data processing system which protects the secrecy of confidential data. 4,271,482, Cl. 364-900.000.

Girling Limited: *See—*
Brearley, Malcolm, 4,270,808, Cl. 303-92.000.
Langert, Albert, 4,270,632, Cl. 188-79.50P.
Thomas, Alfred W.; and Danne, Ulrich W., 4,270,353, Cl. 60-547.00R.

Girling Midland Ross Air Actuation Limited: *See—*
Green, Martin, 4,270,355, Cl. 60-593.000.

Glaser, Hermann: *See—*
Vogt, Wilhelm; and Glaser, Hermann, 4,271,008, Cl. 208-48.00R.

Glass, Jeremy M.; Lampke, George G.; and St. Germain, Roger L., to Raytheon Company. Range tracker utilizing spectral analysis. 4,271,412, Cl. 343-5.0FT.

Glaze, Jack G.; and Overbeek, Robert B. Torque transfer mechanism. 4,270,409, Cl. 74-665.0GA.

Global Manufacturing, Inc.: *See—*
Fallows, John, 4,270,396, Cl. 74-87.000.

Glushko, Mikhail F.; Skalatsky, Viktor K.; Zakhryamin, Anatoly D.; and Shamrai, Gennady F. Method of making a shape-stranded rope. 4,270,341, Cl. 57-215.000.

Goedemans, Wilhelmus T., to Byk-Mallinckrodt CIL B.V. Radioimmunological method of determining the thyroid function by an in vitro test in blood serum. 4,271,141, Cl. 424-1.000.

Goettert, Edward J., to Minnesota Mining and Manufacturing Company. Thermally developable photosensitive compositions containing acutance agents. 4,271,263, Cl. 430-522.000.

Goettsche, Randy P.: *See—*
Gill, Bernard J.; Siegal, Burton L.; and Goettsche, Randy P., 4,270,454, Cl. 101-348.000.

Goheen, Eugene E. Quick hitch for animals or the like. 4,270,492, Cl. 119-118.000.

Goida, John H., to Applied Copy Technology, Inc. Conversion kit for photocopying machine. 4,270,856, Cl. 355-3.00R.

Golownia, Robert F., to SCM Corporation. Curing catalyst for thermosetting powder paints. 4,271,277, Cl. 525-351.000.

Gonzalez, Jesus C. Modular bottle support rack. 4,270,662, Cl. 211-74.000.

Goodman, David J.; Henry, Paul S.; and Prabhu, Vasant K., to Bell Telephone Laboratories, Incorporated. Spread spectrum FH-MFSK receiver. 4,271,524, Cl. 375-1.000.

Goodridge, Francis; and Plimley, Raymond E., to Diamond Shamrock Corporation. Electrochemical cell and process. 4,270,995, Cl. 204-79.000.

Goodsell, David S.: *See—*
Reisman, Elias; Goodsell, David S.; and Masino, Fred S., 4,270,603, Cl. 165-185.000.

Goodyear Tire & Rubber Company, The: *See—*
Grimm, Donald C.; and Gunnerson, Hanford L., 4,271,213, Cl. 427-222.000.

Goorissen, Jan: *See—*
Bollen, Lambertus J. M.; and Goorissen, Jan, 4,270,960, Cl. 148-175.000.

Gordon, Leonard J.; and Myers, Frank A., to Vega Industries, Inc. Fireplace having integral grate. 4,270,515, Cl. 126-164.000.

Goto, Atsuo, to Olympus Optical Co., Ltd. Objective for video disks. 4,270,843, Cl. 350-480.000.

Goto, Noriyuki: *See—*
Isa, Isao; Ebisawa, Makoto; and Goto, Noriyuki, 4,270,925, Cl. 23-230.00R.

Goto, Shoziro: *See—*
Suhara, Manabu; Goto, Shoziro; and Arai, Kiyotaka, 4,270,996, Cl. 204-98.000.

Gould Inc.: *See—*
Blumenthal, John; and Moore, Chad Z., 4,271,417, Cl. 346-154.000.
Williams, Glenn L.; and Reilly, Edward J., 4,271,414, Cl. 346-76.0PH.

Goutmann, Michel M. H.; and Harper, Robert C., to Magnavox Government and Industrial Electronics Co. Digital voice conferencer. 4,271,502, Cl. 370-62.000.

Graas, Joseph E. Microchromatographic device and method for rapid determination of a desired substance. 4,270,921, Cl. 23-230.00B.

Graber, Heinz, to Aktiengesellschaft Karrer, Weber & Cie. Clockwork control valve mechanism. 4,270,574, Cl. 137-624.110.

Grady, Dwight D.: *See—*
Fletcher, Wade D.; McMahon, Edward H.; and Grady, Dwight D., 4,270,475, Cl. 113-120.00K.

Graf, Rupprecht: *See—*
Ansen, Jakob; Duill, Helmut; Fasbender, Heinz; and Graf, Rupprecht, 4,270,466, Cl. 110-193.000.

Graham, William W. Brush cutting attachment for chain saw. 4,270,272, Cl. 30-371.000.

Grange, Kenneth H.: *See—*
Binns, Julian R. H.; and Grange, Kenneth H., 4,270,737, Cl. 256-48.000.

Grant, David C.; and Burgman, Herbert A., to United States of America, Interior. Permeability restoration and lowering of uranium leakage from leached ore beds. 4,270,802, Cl. 299-5.000.

Grasselli, Robert K.; and Suresh, Dev D., to Standard Oil Company. Vapor phase catalytic oxidation and/or ammoxidation of cyclohexanone and/or cyclohexanol to phenol and/or aniline. 4,271,091, Cl. 564-305.000.

Gray, Harry B.; and Mann, Kent R., to California Institute of Technology. Transition metal complex catalysts. 4,271,033, Cl. 252-188.30R.

Gray, Tommy L., to Span Instruments, Inc. Sensor with adjustable pressure responsive detection and control. 4,270,568, Cl. 137-498.000.

Grayson, Jacob H.: *See—*
Lowe, Charles L., 4,270,506, Cl. 123-523.000.

Green, Basil W., to Fraser & Chalmers Equipment Limited. Feed distributors. 4,270,676, Cl. 222-485.000.

Green, James W. Rotatable mounting for necklace gem stone. 4,270,366, Cl. 63-2.000.

Green, Martin, to Girling Midland Ross Air Actuation Limited. Master cylinder and actuator assemblies. 4,270,355, Cl. 60-593.000.

Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., to Hanover Research Corporation. Process and apparatus for recovering clean water and solids from aqueous solids. 4,270,974, Cl. 159-16.00S.

Greenfield, Stanley A.: *See—*
Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., 4,271,308, Cl. 548-262.000.

Gregorovic, Dragutin. Mobile installation for the cold treatment of refuse. 4,270,447, Cl. 100-70.00R.

Grehl, William H., to O. F. Mossberg & Sons, Inc. Firing-pin blocking device for firearms. 4,270,295, Cl. 42-70.00F.

Greiman, Myrl H. W. Sealing assembly. 4,270,760, Cl. 277-3.000.

Greiner, Harry M.: *See—*
Difflipp, Kurt; and Greiner, Harry M., 4,270,450, Cl. 101-142.000.

Greiner, Joachim; and Mager, Albrecht, to Vacuumschmelze GmbH. Integral shield and bias element for magnetic tape cassettes. 4,271,441, Cl. 360-130.330.

Gresch, Heinz: *See—*
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,270,326, Cl. 52-404.000.

Greskovich, Eugene J.: *See—*
Chen, Michael S.; Greskovich, Eugene J.; and Spector, Marshall L., 4,271,026, Cl. 210-605.000.

Greve, Heinz G.: *See—*
Bender, Heinz; Beyerle, Rudi; Keil, Karl-Heinz; Greve, Heinz G.; and Reh, Kuno, 4,271,073, Cl. 260-315.000.

Greven, Hendrik M.: *See*—
de Wied, David; and Greven, Hendrik M., 4,271,152, Cl. 424-177.000.

Griem, Paul D.: *See*—
Menot, Robert; Willard, Robert E.; Griem, Paul D.; and Devine, Guy E., 4,271,505, Cl. 370-85.000.

Gries, Josef: *See*—
Thyes, Marco; Gries, Josef; Lehmann, Hans D.; Lenke, Dieter; and Kunze, Johannes, 4,271,163, Cl. 424-250.000.

Griesen, Bertus, to Hazemeijer B.V. Electrical vacuum switch having means for generating an axial magnetic field between the contact faces. 4,271,340, Cl. 200-144.00B.

Grill, Benjamin: *See*—
Sturman, Oded E.; and Grill, Benjamin, 4,270,573, Cl. 137-624.200.

Grillo, Richard J.: *See*—
Schiffmann, Robert F.; Mirman, Alfred H.; and Grillo, Richard J., 4,271,203, Cl. 426-243.000.

Grimm, Donald C.; and Gunnerson, Hanford L., to Goodyear Tire & Rubber Company, The. Fused, thermoplastic partitioning agent and preparation of crumb rubber coated therewith. 4,271,213, Cl. 427-222.000.

Grise, Frederick G. J. Expansion joint. 4,270,871, Cl. 403-29.000.

Groeschel, Vernon E.; and Angehrn, Jorg A., to Dresser Industries, Inc. Method and apparatus for natural gamma ray spectrum analysis using microprocessor stripper. 4,271,356, Cl. 250-262.000.

Grogan, Martin L., to Rockwell International Corporation. Method and apparatus for protecting alternating current circuits. 4,271,449, Cl. 361-94.000.

Groleau, Rodney J., to Control Process, Inc. Method for controlling an exothermic molding process. 4,271,106, Cl. 264-40.500.

Gross, Meyer A., to New York Toy Corporation. Interlock support structure. 4,270,239, Cl. 16-112.000.

Grossa, Mario: *See*—
Abele, Werner; Grossa, Mario; and Pilz, Otto, 4,271,260, Cl. 430-292.000.

Grossoleil, Jacques: *See*—
Daniel, Jean-Claude; Grossoleil, Jacques; and Roullet, Robert, 4,271,055, Cl. 260-29.6TA.

Grote, Dace: *See*—
Trivedi, Bhupendra C.; Grote, Dace; and Mason, Thomas O., 4,270,983, Cl. 203-43.000.

Grundy, Reed H. Motion translating mechanism. 4,270,395, Cl. 74-49.000.

Gruppo Lepetit S.p.A.: *See*—
Cricchio, Renato, 4,271,155, Cl. 424-200.000.

GTE Automatic Electric Laboratories, Inc.: *See*—
Lim, Linda W., 4,270,465, Cl. 110-127.000.

GTE Laboratories Incorporated: *See*—
Rodriguez-Perazza, Manuel, 4,270,907, Cl. 474-200.000.

GTE Products Corporation: *See*—
Armstrong, Donald E.; Sindlinger, Ronald E.; and Harvey, William J., 4,270,897, Cl. 431-362.000.
Brown, Timothy W., 4,271,528, Cl. 455-179.000.
Hand, Wilfred L.; and Jacek, Victor J., 4,271,533, Cl. 455-192.000.

Guarascio, Massimo. Cylindrical separator apparatus for separating mixtures of solids of different specific gravities, particularly for the mining industry. 4,271,010, Cl. 209-211.000.

Gudat, Wolfgang: *See*—
Ruhnau, Gerhard; Gudat, Wolfgang; Lindemann, Klaus; and Saba, Manfred, 4,270,810, Cl. 303-106.000.

Gulaskey, Joseph W.: *See*—
Andrews, Harry N.; Eglinton, Edmund C.; Gulaskey, Joseph W.; Balog, Leonard J.; and Beer, Robert W., 4,270,258, Cl. 29-157.400.

Gulati, Suresh T.; and Hagy, Henry E., to Corning Glass Works. Metal shaping die assembly. 4,270,380, Cl. 72-467.000.

Gulf Canada Limited: *See*—
Souhrada, Frank; and Galvez, Buenaventura B., 4,271,007, Cl. 208-48.00R.

Gunnerson, Hanford L.: *See*—
Grimm, Donald C.; and Gunnerson, Hanford L., 4,271,213, Cl. 427-222.000.

Gusdorf Corporation: *See*—
Gusdorf, Walter, 4,270,822, Cl. 312-265.000.

Gusdorf, Walter, to Gusdorf Corporation. Cabinet and door assembly. 4,270,822, Cl. 312-265.000.

Guthohrlein, Gerhard: *See*—
Helting, Torsten B.; and Guthohrlein, Gerhard, 4,271,147, Cl. 424-92.000.

Gutman, Arnold D., to Stauffer Chemical Company. N-Aryl,2-phenoxy nicotinamide compounds and the herbicidal use thereof. 4,270,946, Cl. 71-94.000.

Gutman, Arnold D., to Stauffer Chemical Company. α-(Phenylazo)-2,6-dichlorobenzaldimino esters and their use as herbicides. 4,270,947, Cl. 71-98.000.

Gutmann, Gordon L. Arm support pillow. 4,270,235, Cl. 5-431.000.

H.F. Communications Corporation: *See*—
Leveque, J. Howard, 4,271,499, Cl. 370-7.000.

H.L.P. Imports Ltd.: *See*—
Perovetz, Lawrence M.; and Stern, Harold J., 4,270,932, Cl. 51-293.000.

Haase, Thomas A.: *See*—
Pesa, Frederick A.; and Haase, Thomas A., 4,271,038, Cl. 252-428.000.

Haberrecker, Klaus: *See*—
Geldner, Ernst; Friedel, Rudolf; and Haberrecker, Klaus, 4,271,372, Cl. 313-330.000.

Haftmann, Johannes, to Nixdorf Computer AG. Ink ribbon magazine for endless ink ribbon cartridge. 4,270,867, Cl. 400-207.000.

Hagy, Henry E.: *See*—
Gulati, Suresh T.; and Hagy, Henry E., 4,270,380, Cl. 72-467.000.

Hahn, Edward R., to Albany International Corp. Papermakers felt and method of manufacture. 4,271,222, Cl. 428-193.000.

Haikkala, Pekka O., to Oy Tampella Ab. Method of and a grinder for discharging groundwood stock when grinding wood under pressure. 4,270,703, Cl. 241-18.000.

Halcon Research and Development Corp.: *See*—
Khoobiar, Sargis, 4,271,040, Cl. 252-437.000.
Naglieri, Anthony N.; and Rizkalla, Nabil, 4,271,090, Cl. 260-550.000.

Hall, Daniel W.: *See*—
Suh, Sang K.; and Hall, Daniel W., 4,270,951, Cl. 75-200.000.

Hall, James B., to Storage Technology Corporation. Address mark generation and decoding method. 4,271,519, Cl. 371-38.000.

Hall, Randall C.: *See*—
Dixon, Jack B.; and Hall, Randall C., 4,271,022, Cl. 210-198.200.

Halliburton Company: *See*—
Barrington, Burchus Q., 4,270,610, Cl. 166-317.000.
Hendrickson, James D.; White, Pat M.; Davis, Odie R. S.; Workman, Nolan M.; Baker, Eugene E.; and Szarka, David D., 4,270,608, Cl. 166-278.000.

Hallmark, Bobby J., to Gearhart Owen Industries, Inc. Tool for testing earth formations in boreholes. 4,270,385, Cl. 73-155.000.

Halls, Lawrence M., to Sperry Corporation. Crop harvesting machine. 4,270,338, Cl. 56-14.400.

Halter, Joseph M.: *See*—
Eklund, James D.; Halter, Joseph M.; Rasmussen, Donald E.; Sullivan, Robert G.; and Moffat, Robert B., 4,270,876, Cl. 405-133.000.

Hamakawa, Yoshihiro; Okamoto, Hiroaki; Nitta, Yoshiteru; and Adachi, Toshio, to Hamakawa, Yoshihiro. Photovoltaic device. 4,271,328, Cl. 136-249.000.

Hamashima, Yoshio: *See*—
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,295, Cl. 544-182.000.
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,296, Cl. 544-182.000.

Hamilton Tool Company: *See*—
Crampton, Charles P., 4,270,743, Cl. 270-58.000.

Hamlin, Thomas J., to Xerox Corporation. Sheet separator. 4,270,746, Cl. 271-98.000.

Hammann, Ingeborg: *See*—
Forster, Heinz; Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,271,186, Cl. 424-304.000.

Hammel, Joseph J.: *See*—
Amrhein, Alan G.; Hammel, Joseph J.; and Shelestak, Larry J., 4,270,945, Cl. 65-99.00A.

Hamon, Francois H. J., to Moulinex, Societe Anonyme. Water heater. 4,271,349, Cl. 219-283.000.

Hamparian, Nshan: *See*—
Garter, Robert F.; Hamparian, Nshan; and Lee, Litton T., 4,270,494, Cl. 123-41.350.

Hancock, Roger H. Y.; and Kerr, Neil, to Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The. Pinned suction anchors. 4,270,480, Cl. 114-296.000.

Hand, Wilfred L.; and Jacek, Victor J., to GTE Products Corporation. AFC Interface circuit. 4,271,533, Cl. 455-192.000.

Hanna Furnace Corporation, The: *See*—
Bhattacharyya, Aniruddha, 4,271,013, Cl. 210-617.000.

Hannah, John, to Merck & Co., Inc. 7-N-Heterocyclyl-2-substituted 1-oxadethia-cephalosporins. 4,271,159, Cl. 424-248.510.

Hanover Research Corporation: *See*—
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,270,974, Cl. 159-16.00S.

Hansen, Guenter; Pottgiesser, Hermann; and Schlindwein, Walter, to BASF Aktiengesellschaft. Process for securing bulk loads in motor coasters and ocean-going vessels against shifting. 4,271,231, Cl. 428-323.000.

Hansen, Karl A.; and Hendrickson, Iver G., to Boeing Company, The. Apparatus and method for eddy current detection of subsurface discontinuities in conductive bodies. 4,271,393, Cl. 324-240.000.

Hanson, Catherine F. Finger ring splint. 4,270,528, Cl. 128-87.00A.

Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method of stabilizing organic substrate materials including photographic dye images to light and a photographic material so stabilized. 4,271,252, Cl. 430-216.000.

Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method for stabilizing organic substrate materials including photographic dye images to light and photographic material so stabilized. 4,271,253, Cl. 430-216.000.

Harada, Yasukazu: *See*—
Sasaki, Koji; and Harada, Yasukazu, 4,271,150, Cl. 424-177.000.

Harasaki, Hayatsugu; and Imura, Yutaka, to Toyo Kogyo Co., Ltd. Automobile front deck structure. 4,270,793, Cl. 296-192.000.

Harder, Arthur J., Jr., to Coach & Car Equipment Corporation. Breakaway arm for seat. 4,270,798, Cl. 297-417.000.

Hardy, Jay C., to Hardy Welded Products, Inc. Welding apparatus capable of welding axially offset portions. 4,271,346, Cl. 219-76.140.

Hardy Welded Products, Inc.: *See*—
Hardy, Jay C., 4,271,346, Cl. 219-76.140.

Harenberg, Donald D.: *See*—
Dlugos, Daniel F.; and Harenberg, Donald D., 4,271,470, Cl. 364-466.000.

Hargis, Billy M., to Minnesota Mining and Manufacturing Company. Leaded mounting and connector unit for an electronic device. 4,271,426, Cl. 357-74.000.

Harigaya, Isao: *See*—
Suzuki, Ryoichi; Harigaya, Isao; and Uchiyama, Takashi, 4,270,852, Cl. 354-23.00D.

Harnsberger, Bobby G.: *See*—
Cardenas, Ricardo L.; Harnsberger, Bobby G.; and Maddox, Jim, Jr., 4,270,607, Cl. 166-273.000.

Harper, Robert C.: *See*—
Goutmann, Michel M. H.; and Harper, Robert C., 4,271,502, Cl. 370-62.000.

Harris Corporation: *See*—
Eckelmeyer, Edward H., 4,271,379, Cl. 318-77.000.

Harrison, David M.; Watson, Walter E., III; Moore, Maurice S.; and Jermyn, Roger E., to Allied Chemical Corporation. Apparatus to count and control crimps in a moving tow of yarn. 4,270,252, Cl. 28-250.000.

Hart, Hiram. Scintillation proximity assay. 4,271,139, Cl. 424-1.000.

Harteck, Paul, to Rensselaer Polytechnic Institute. Fixation of nitrogen. 4,271,137, Cl. 423-395.000.

Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. Solid-state protector circuitry using gated diode switch. 4,271,445, Cl. 361-56.000.

Harvey Hubbell Incorporated: *See*—
Barkas, Emanuel E., 4,271,337, Cl. 200-51.090.

Harvey, William J.: *See*—
Armstrong, Donald E.; Sindlinger, Ronald E.; and Harvey, William J., 4,270,897, Cl. 431-362.000.

Hasbro Industries, Inc.: *See*—
Samuels, Donald H., 4,270,305, Cl. 46-221.000.

Hasebe, Isamu: *See*—
Yamamoto, Mitsuru; Arai, Jun; Isogawa, Takao; and Hasebe, Isamu, 4,271,466, Cl. 364-200.000.

Hasegawa, Kinji: *See*—
Mitsuishi, Yukio; Shiozaki, Shigeru; and Hasegawa, Kinji, 4,270,308, Cl. 47-17.000.

Hashimoto, Norikazu: *See*—
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,270,262, Cl. 29-571.000.

Hashimoto, Yasuyuki; and Torii, Osamu, to Ancos Co., Ltd. Mechanical pencil with chuck closing by normal writing grip. 4,270,870, Cl. 401-93.000.

Hassan, Javathu K.; and Paivanas, John A., to International Business Machines Corporation. Method and apparatus for gas feed control in a dry etching process. 4,270,999, Cl. 204-192.00E.

Hatada, Kotaro; Higuchi, Masaru; and Iwata, Hiroshi, to West Electric Company, Ltd. Sound-recording instant-printing film and camera therefor. 4,270,853, Cl. 354-76.000.

Hatanaka, Kiyoshi: *See*—
Oonishi, Toshiyuki; Motoyama, Takeshi; and Hatanaka, Kiyoshi, 4,270,364, Cl. 62-198.000.

Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., to Eli Lilly and Company. Thiazolinoazetidinones and process therefor. 4,271,305, Cl. 548-153.000.

Hattori, Hiroyuki: *See*—
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,270,857, Cl. 355-8.000.

Hatuse, Toshikazu: *See*—
Tamaru, Munetaka; and Hatuse, Toshikazu, 4,271,493, Cl. 368-28.000.

Hauck, Heinz E., to Merck Patent Gesellschaft mit Beschrankter Haftung. Process for increasing the resistance to water of pre-coated preparations for chromatography. 4,271,021, Cl. 210-198.300.

Hauck, Peter: *See*—
Niemann, Klaus; Wulf, Helmut; and Hauck, Peter, 4,270,405, Cl. 74-499.000.

Hauser, Seymour: *See*—
Meyerson, Stanley; and Hauser, Seymour, 4,270,249, Cl. 24-241.0PP.

Hausmann, Werner A., to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hoschschule. Device for the production of sol-gel globules in coarse and fine fractions. 4,271,037, Cl. 252-359.00R.

Hawk, Charles E.; and Livingston, Danny K., to Teledyne, Inc. Indirectly heated thermal flowmeter. 4,270,386, Cl. 73-204.000.

Hawkins, John J., to Beckman Instruments, Inc. Calcium ion-selective electrodes and membrane for use therein. 4,271,002, Cl. 204-195.00M.

Hayashi, Atsuko, heir: *See*—
Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; Hayashi, Atsuko, heir; Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, 4,271,310, Cl. 560-71.000.

Hayashi, Hiroaki, deceased: *See*—
Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; Hayashi, Atsuko, heir; Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, 4,271,310, Cl. 560-71.000.

Hayashi, Masaki: *See*—
Tanouchi, Tadao; Kawamura, Masanori; and Hayashi, Masaki, 4,271,170, Cl. 424-263.000.

Hayashi, Shunichi: *See*—
Suzuki, Hideto; Hayashi, Shunichi; and Yoshioka, Takahiro, 4,271,061, Cl. 260-37.0EP.

Hayashi, Tadatoshi: *See*—
Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; Hayashi, Atsuko, heir; Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, 4,271,310, Cl. 560-71.000.

Hayashi, Yuko, heir: *See*—
Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; Hayashi, Atsuko, heir; Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, 4,271,310, Cl. 560-71.000.

Hayes, Thomas E., to Johnson Controls, Inc. Electronic thermostat with heat anticipation and control method incorporating same. 4,270,693, Cl. 236-46.00F.

Haynes, Charles. Solar heating system. 4,270,519, Cl. 126-430.000.

Haynes, George R., to Shell Oil Company. Heterocyclyl 2-(2-(4-hydroxyphenyl)-2-hydroxy-1-methyl)ethylamino)ethyl ketones as lipogenesis inhibitors. 4,271,185, Cl. 424-285.000.

Hays, Richard A.: *See*—
Cobble, Milan H.; Hull, Wendell C.; and Hays, Richard A., 4,270,844, Cl. 350-294.000.

Hazemeijer B.V.: *See*—
Griesen, Bertus, 4,271,340, Cl. 200-144.00B.

Heald, Terence E.; and Porter, Roy, to Imperial Chemical Industries Limited. Stabilized aqueous dyestuff dispersions. 4,270,917, Cl. 8-527.000.

Hebern, William D. Exercising device. 4,270,749, Cl. 272-96.000.

Hechler, Valentine, IV. Bumper. 4,270,701, Cl. 239-288.500.

Hecht, Ralph J.: *See*—
Wright, Robert J.; and Hecht, Ralph J., 4,271,005, Cl. 204-298.000.

Heckel, Klaus; Klaffke, Friedemann; Umann, Walter; and Schwarz, Volker, to Carl Freudenberg, Firma. Pipe insulating jacket. 4,271,218, Cl. 428-36.000.

Heckles, John S., to Armstrong Cork Company. Acrylate-acetoacetamide polymers. 4,271,237, Cl. 428-520.000.

Heilman, Marlin S., to Mirowski, Mieczyslaw. Method for implanting cardiac electrodes. 4,270,549, Cl. 128-784.000.

Heiman, Neil D.; White, Robert L.; Potter, Robert I.; and Albert, Paul A., to International Business Machines Corporation. Amorphous magnetic film. 4,271,232, Cl. 428-332.000.

Heimann GmbH: *See*—
Herwig, Thomas; and Doenges, Gerhard, 4,271,359, Cl. 250-347.000.

Heinemann, Henning: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ulrich; Hell, Insa; and Hempel, Reinhard, 4,271,193, Cl. 424-324.000.

Heinzi, Joachim, to Siemens Aktiengesellschaft. Container of variable volume. 4,270,589, Cl. 150-0.500.

Heissenberger, Otto: *See*—
Bergloff, Dag; Wohlfarter, Alois; Heissenberger, Otto; Muhlhauser, Martin; and Petschauer, Franz, 4,270,254, Cl. 29-148.40D.

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Shy, James L.; and Hess, Paul D., 4,270,900, Cl. 432-58.000.
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Teulon, Jean M., 4,271,161, Cl. 424-250.000.
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Terashima, Isamu; Twubaki, Toshio; and Anzai, Masayasu, 4,270,487, Cl. 118-690.000.
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Hrovat, Milan; and Spener, Gerhard, 4,271,101, Cl. 264-0.500.
Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus, 4,271,207, Cl. 427-6.000.
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Hodshire, Vincent B. Fishing apparatus. 4,270,298, Cl. 43-15.000.
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Schrodter, Klaus; Scheibitz, Wolfgang; and Ehlers, Klaus-Peter, 4,271,128, Cl. 422-189.000.
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Vogt, Wilhelm; and Glaser, Hermann, 4,271,008, Cl. 208-48.00R.
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Hoffmann, Kurt; and Zapf, Karl, to Siemens Aktiengesellschaft. Clock-controlled DC converter. 4,271,461, Cl. 363-60.000.
Hoffmann-La Roche Inc.: *See*—
Fujiwara, Akiko; and Masuda, Setsuko, 4,271,268, Cl. 435-158.000.
Schmidt, Dieter, 4,271,196, Cl. 424-358.000.
Strassle, Rudolf; and Zaugg, Hans, 4,271,122, Cl. 422-61.000.
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Homan, Gary R.; and Lee, Chi-long, to Dow Corning Corporation. Oxygen-curable mercapto-functional organic compound compositions catalyzed by metal carbonyl compounds and method of forming higher molecular weight products therefrom. 4,271,289, Cl. 528-374.000.
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Anderson, Rogers H.; G., Enrique Bernal; and Chen, Di, 4,271,104, Cl. 264-1.500.
Schmit, Joseph L.; and Scott, M. Walter, 4,270,973, Cl. 156-605.000.
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Hopkins, Walter; Friello, Dominick R.; Cherukuri, Subraman R.; Roy, Raymond L.; and Mackay, Donald A. M. Chewing gum containing sugar substitute. 4,271,197, Cl. 426-3.000.
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Hopper, Thomas P.; and Barber, Everett M., Jr., to Sunworks, Inc. Solar energy collector. 4,270,516, Cl. 126-417.000.
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, to Hitachi, Ltd. Semiconductor device and process for making the same. 4,270,262, Cl. 29-571.000.
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Claxton, Gerald L.; and Horn, Darrell C., 4,270,581, Cl. 140-57.000.
Hornbeck, Larry J., to Texas Instruments Incorporated. Serial readout stratified channel CCD. 4,271,419, Cl. 357-24.000.
Hosmer, William A., to Scott Paper Company. Coating composition for decorative laminates. 4,271,221, Cl. 428-172.000.
Hosono, Tsutomu, to Fuji Photo Optical Co., Ltd. Flash light discharge device. 4,271,375, Cl. 315-241.00P.
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Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Protein-bound polysaccharides. 4,271,151, Cl. 424-177.000.
Howat, Robert J., to Northern Telecom Limited. Wrapping articles of indefinite length. 4,270,963, Cl. 156-201.000.
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Hubby, John S., to Phillips Petroleum Company. Solution polymerization process. 4,271,060, Cl. 260-33.60A.
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Hummel, Steven L. Solar heating system. 4,270,359, Cl. 62-2.000.
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Hurst, Gerald L., to Atlas Powder Company. Desensitized primary explosives. 4,270,435, Cl. 86-1.00R.
Hurst, Paul N. Door vise. 4,270,741, Cl. 269-17.000.
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Husson, Richard R. Linkage device for drafting tables. 4,270,460, Cl. 108-3.000.
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Hyde, Bruce; and Tyndall, Wayne, to Prince Albert Pulpwood Ltd. Continuous felling of trees. 4,270,586, Cl. 144-309.0AC.
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Imatt, Alex, to Marvin Glass & Associates. Amusement device. 4,270,754, Cl. 273-273.000.
Imhof, Robert: *See—*
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Eggleton, Reginald C., 4,270,388, Cl. 73-603.000.
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Interface Design Group, Inc.: *See—*
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Interhydro AG: *See—*
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Almasi, George S.; Bogholtz, Wilhelm E.; and Keefe, George E., 4,271,485, Cl. 365-16.000.
Cheselka, Harry; Nemecek, William F.; and Stockwell, Dean A., 4,271,479, Cl. 364-900.000.
Christensen, Neal T.; Van Loo, William C.; Werner, Robert H.; Wetzel, Joseph A.; and Zeitler, Carl, Jr., 4,271,468, Cl. 364-200.000.
Hassan, Javathu K.; and Paivanas, John A., 4,270,999, Cl. 204-192.00E.
Heiman, Neil D.; White, Robert L.; Potter, Robert I.; and Albert, Paul A., 4,271,232, Cl. 428-332.000.
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Morgan, David B.; Pan, Robert F.; Quinn, Paul A., Jr.; and Westerman, Glenn S., 4,270,868, Cl. 400-320.000.
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Brown, Ernest W., 4,270,429, Cl. 83-851.000.

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Drake, Cyril F.; and Adams, Neil R., 4,271,057, Cl. 260-29.60M.
Vance, Ian A. W.; and Overy, Michael R., 4,271,501, Cl. 370-24.000.

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Jenkins, John P.; Sabick, Rodney M.; and Kidd, William W., 4,271,440, Cl. 360-92.000.

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Schiffmann, Robert F.; Mirman, Alfred H.; and Grillo, Richard J., 4,271,203, Cl. 426-243.000.

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Ward, Brooke A., 4,271,360, Cl. 250-353.000.

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Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., to Eastman Kodak Company. Bichromophoric benzotriazole-benzoxazole ultraviolet stabilizers and their use in organic compositions. 4,271,307, Cl. 548-224.000.

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Borner, Paul; Isensee, Hans-Jorg; and Vietzke, Horst, 4,271,127, Cl. 422-159.000.

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Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,270,950, Cl. 75-126.00L.

Ishida, Yukihito: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,271,084, Cl. 260-429.00R.

Ishihara Sangyo Kaisha Ltd.: *See—*
Murasawa, Sadao; Murakami, Hajime; and Ichida, Hiroshi, 4,270,485, Cl. 118-648.000.
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,270,948, Cl. 71-100.000.

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Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, 4,271,453, Cl. 361-248.000.

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Yamamoto, Mitsuru; Arai, Jun; Isogawa, Takao; and Hasebe, Isamu, 4,271,466, Cl. 364-200.000.

Israel Aircraft Industries Limited: *See—*
Shitrai, Arie, 4,271,336, Cl. 200-24.000.

Ito, Katsuo; Murata, Bunjiro; and Yoshimura, Kazunori, to Murata Manufacturing Co., Ltd. Toning shaft for a rotary switch. 4,270,394, Cl. 74-10.00R.

Ito, Toshimitsu: *See—*
Kawai, Hisasi; Ito, Toshimitsu; Sanada, Masakatsu; and Iwase, Kazuo, 4,271,469, Cl. 364-431.000.

Ito, Yoshiyashu; Sugiura, Takeo; and Sawada, Yoshikatsu, to Toppan Printing Co., Ltd. Method of printing plastic surfaces. 4,270,449, Cl. 101-129.000.

Itoh, Kiyoo: *See—*
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,270,262. Cl. 29-571.000.

Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, to Onoda Cement Co., Ltd. Method for coating a metallic squeeze-out tube. 4,271,208, Cl. 427-28.000.

ITT Industries, Inc.: *See—*
Munz, Joachim; Prohaska, Hans; and Rachner, Horst, 4,271,381, Cl. 318-282.000.

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Hatada, Kotaro; Higuchi, Masaru; and Iwata, Hiroshi, 4,270,853, Cl. 354-76.000.

Izu, Masatsugu: *See—*
Wacks, Harvey H.; Izu, Masatsugu; and Sarrach, Donald J., 4,271,257, Cl. 430-276.000.

Jacek, Victor J.: *See—*
Hand, Wilfred L.; and Jacek, Victor J., 4,271,533, Cl. 455-192.000.

Jackson, Francis B.: *See—*
Mabery, Thomas L.; and Jackson, Francis B., 4,270,690, Cl. 228-173.00F.

Jackson, George J., to Caterpillar Tractor Co. Valve with non-binding spool. 4,270,731, Cl. 251-309.000.

Jacob, Susan R.: *See—*
Brown, Patrick M.; Jacob, Susan R.; and Boryta, Daniel A., 4,271,131, Cl. 423-179.500.

Jacobi, John H.; and Larsen, Lawrence E., to United States of America, Army. Method and apparatus for physiologic facsimile imaging of biologic targets without multipath contamination using remote microwave interrogation. 4,271,389, Cl. 324-58.50A.

Jacobs, Eddy L., to United States of America, Energy. Arsenic activation neutron detector. 4,271,361, Cl. 250-390.000.

Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,270,268, Cl. 30-47.000.

Jakusch, Helmut: *See—*
Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.

Jalbert, Domina C. Parachute canopy. 4,270,714, Cl. 244-145.000.

James, David R., to James Investments Limited. Net-type beds. 4,270,234, Cl. 5-81.00R.

James, Haydn, to Lucas Industries Limited. Vehicle headlamp assembly. 4,271,459, Cl. 362-346.000.

James Investments Limited: *See—*
James, David R., 4,270,234, Cl. 5-81.00R.

Janoski, Florian B., to Atlas Powder Company. Blasting cap booster assembly. 4,270,455, Cl. 102-318.000.

Janssens, Theo; and Willems, Victor, to B. F. G. Glassgroup. Apparatus for manufacturing glazing panels. 4,270,688, Cl. 228-5.100.

Japan Aviation Electronics Industry, Limited: *See—*
Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, 4,271,453, Cl. 361-248.000.

Japan Carlit Co., Ltd., The: *See—*
Isa, Isao; Ebisawa, Makoto; and Goto, Noriyuki, 4,270,925, Cl. 23-230.00R.

Jarecki, John S.: *See—*
Lay, Roger F.; Jarecki, John S.; and Koch, Robert M., 4,270,652, Cl. 198-486.000.

Jarzynka, Clifford J. Hinging downspout assembly. 4,270,572, Cl. 137-615.000.

Jaschke, Peter; Monch, Eckhard; and Weber, Roland, to VEB Gaskombinat Schwarze Pumpe. Cooling arrangement for the locking device in pressure gasification reactors. 4,270,931, Cl. 48-86.00R.

Jauch, Gerhard: *See—*
Quay, Earl R.; and Jauch, Gerhard, 4,270,369, Cl. 66-157.000.

Jean Walterscheid GmbH: *See—*
Kugler, Manfred, 4,270,374, Cl. 72-68.000.

Jenkins, John M.; Pedder, Christopher T.; and Robertson, Neil G. D., to Brown & Williamson Tobacco Corporation. Process and apparatus for producing paper reconstituted tobacco. 4,270,552, Cl. 131-290.000.

Jenkins, John P.; Sabick, Rodney M.; and Kidd, William W., to International Tapetronics Corporation. Automatic tape cartridge handling system. 4,271,440, Cl. 360-92.000.

Jermed Limited: *See—*
Thompson, David K., 4,270,416, Cl. 81-3.00R.

Jermyn, Roger E.: *See—*
Harrison, David M.; Watson, Walter E., III; Moore, Maurice S.; and Jermyn, Roger E., 4,270,252, Cl. 28-250.000.

Jessop, Michael E., to General Motors Corporation. Steering column lock inhibitor for a floor mounted transmission control. 4,270,624, Cl. 180-287.000.

Jewell, Walter: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Jewell, Walter; and Mackay, Donald A. M., 4,271,198, Cl. 426-3.000.

Jeyabalan, Vadivelu: *See—*
Gable, Melvin G.; Sherman, Richard H.; and Jeyabalan, Vadivelu, 4,271,507, Cl. 370-94.000.

Jinnouchi, Hidenobu: *See—*
Matsumoto, Masahiro; Kawate, Kenji; and Jinnouchi, Hidenobu, 4,270,959, Cl. 148-153.000.

Jockel, Heinz: *See—*
Supp, Emil; Jockel, Heinz; Cornelius, Gerhard; and Marschner, Friedmann, 4,271,086, Cl. 518-704.000.

John Fluke Mfg. Co., Inc.: *See*—
Axtell, Clyde R., III; and Drabing, Richard B., 4,271,515, Cl. 371-25.000.
John Wyeth & Brother, Ltd.: *See*—
Edington, Edwin T.; and White, Alan C., 4,271,304, Cl. 546-290.000.
Johnson Controls, Inc.: *See*—
Hayes, Thomas E., 4,270,693, Cl. 236-46.00F.
Johnson, Elwin L.; Kilby, Jack S.; Lathrop, Jay W.; McFerren, John S.; and Myers, David J., to Texas Instruments Incorporated. Glass support light energy converter. 4,270,263, Cl. 29-590.000.
Johnson, John D.; and Mixon, Connie D., to United Merchants and Manufacturers, Inc. Fabric printing process. 4,270,915, Cl. 8-477.000.
Johnson, Oran W.: *See*—
McSwiney, Thomas L.; Bomar, George S.; and Johnson, Oran W., 4,270,443, Cl. 493-287.000.
Johnson, Randall W., to Auto-Miser International Manufacturing Corp. Fuel vaporizer system. 4,270,505, Cl. 123-522.000.
Johnsson, Tage R. W., to Saab-Scania AB. Synchronizing arrangement for a motor vehicle gear box. 4,270,639, Cl. 192-53.00F.
Johnston, David K.; and Suderman, Donald A., to Allis-Chalmers Corporation. Air baffle for harvester accelerator rolls. 4,270,551, Cl. 130-27.00H.
Johnston, Robert T., to Coaltek Corporation. Disperser seal and method. 4,270,762, Cl. 277-59.000.
Jokari/U.S., Inc.: *See*—
Ligon, Samuel B., 4,270,757, Cl. 273-411.000.
Jones, John L., Jr.: *See*—
Coggin, Charles H., Jr.; and Jones, John L., Jr., 4,270,942, Cl. 65-11.00W.
Jones, Robert A.: *See*—
Brierley, John M.; Parsons, John S.; Trueman, James R.; and Jones, Robert A., 4,271,030, Cl. 252-98.000.
Jones, William R., to Rolls-Royce Limited. Composite structure. 4,271,116, Cl. 264-221.000.
Joronen, Osmo K. Fish-operated aquarium feeder. 4,270,489, Cl. 119-51.00R.
Joy Manufacturing Company: *See*—
Densmore, Neal W., 4,270,653, Cl. 198-554.000.
Judd, Richard K.: *See*—
Walters, L. Kirk; Judd, Richard K.; and Atkins, Terrance J., 4,271,094, Cl. 261-39.00B.
Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V. Process for producing carbo-chain homo-polymers, block- and random copolymers of conjugated dienes with vinyl-aromatic monomers. 4,271,282, Cl. 526-174.000.
Judy, James W. Stone rake and ground conditioning machine. 4,270,614, Cl. 171-63.000.
Julien, Henri C. P., to APTUNION Union des Fabricants de Fruits Confits. Sulfite treatment of cherries. 4,271,204, Cl. 426-259.000.
Jungesjo, Harald N., to Anderson-Cook, Inc. Forming machine including rotary drive mechanism. 4,270,375, Cl. 72-88.000.
Junginger, Erich: *See*—
Hertfelder, Wilhelm; Junginger, Erich; and Linder, Ernst, 4,270,726, Cl. 251-30.000.
Just, Guenther: *See*—
Wuest, Willi; Just, Guenther; and Peters, Bernd W., 4,271,135, Cl. 423-329.000.
K-V. Associates, Inc.: *See*—
Kerfoot, William B., 4,270,922, Cl. 23-230.00C.
Kabushiki Kaisha Daini Seikosha: *See*—
Miyazaki, Joichi, 4,271,494, Cl. 368-34.000.
Shida, Masaharu; Torisawa, Akira; Ueda, Makoto; Mandai, Masaaki; Sato, Katsuhiko; and Asano, Kazuhiro, 4,271,496, Cl. 368-80.000.
Kabushiki Kaisha Deini Seikosha: *See*—
Miyamoto, Masao, 4,270,846, Cl. 350-336.000.
Kabushiki Kaisha Fuji Seisakusho: *See*—
Kimura, Yoshimi, 4,270,289, Cl. 40-379.000.
Kabushiki Kaisha Morita Seisakusho: *See*—
Furuichi, Shuhei; and Nose, Takahiko, 4,271,371, Cl. 310-316.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Tezuka, Chikao; and Mikoshiba, Hitoshi, 4,270,448, Cl. 101-99.000.
Kabushiki Kaisha Tokai-Rika-Denki Seisakusho: *See*—
Inukai, Mitsuo, 4,270,709, Cl. 242-107.700.
Kacirek, Kenneth J., to PPG Industries, Inc. Sheet stacking apparatus. 4,270,879, Cl. 414-35.000.
Kadota, Toshihiko: *See*—
Takahashi, Naoyuki; and Kadota, Toshihiko, 4,270,723, Cl. 248-421.000.
Kafka, Charles F.; and Kafka, Robert S., to Meacham Marine Products, Inc. Disappearing cleat or fitting. 4,270,478, Cl. 114-218.000.
Kafka, Robert S.: *See*—
Kafka, Charles F.; and Kafka, Robert S., 4,270,478, Cl. 114-218.000.
Kainuma, Akio, to Nippon Light Metal Company Limited. Method of creating landfill from red mud. 4,270,875, Cl. 405-129.000.
Kairisalo, Pekka J.: *See*—
Honkanen, Erkki J.; Pippuri, Aino K.; Kairisalo, Pekka J.; Thaler, Heinrich; Koivisto, Maija K.; and Tuomi, Sirpa A., 4,271,300, Cl. 544-291.000.
Kaiser, Wolfgang: *See*—
Michel, Walter; Honel, Hans; Schon, Manfred; and Kaiser, Wolfgang, 4,271,286, Cl. 528-254.000.
Kalbfleisch, Adolphe W. Rotary valve actuator construction. 4,270,849, Cl. 251-292.000.
Kali-Chemie Pharma GmbH: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ulrich; Heil, Insa; and Hempel, Reinhard, 4,271,193, Cl. 424-324.000.
Kalk, Heinz, to VDO Adolf Schindling AG. Device for unlocking and locking of doors, particularly of motor vehicle doors. 4,270,371, Cl. 70-264.000.
Kalkstein, Arie, to In-Mar Electronics, a part interest. Analog processing system for real-time conversion of the frequency of analog signals. 4,271,331, Cl. 179-1.0SH.
Kamber, Bruno; and Rittel, Werner, to Ciba-Geigy Corporation. Process for the manufacture of cystine-containing peptides. 4,271,068, Cl. 260-112.50R.
Kamman, Daniel T., to Polaroid Corporation. Gap measurement apparatus. 4,270,382, Cl. 73-37.500.
Kamo, Takashi: *See*—
Ishii, Shinya; Saito, Takaharu; Sugiyama, Masahiko; and Kamo, Takashi, 4,270,691, Cl. 228-194.000.
Kan, Peter T.: *See*—
Christman, Donald L.; and Kan, Peter T., 4,271,087, Cl. 260-453.0AB.
Kandrusev, Igor I.: *See*—
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Pogorelova, Iraida S.; Pritsker, Petr Y.; Kandrusev, Igor I.; and Liberfarb, Zilek B., 4,270,349, Cl. 60-384.000.
Kane, John L.; and Nadkarni, Vikas M., to Owens-Corning Fiberglas Corporation. Apparatus for producing filaments. 4,270,888, Cl. 425-66.000.
Kane Manufacturing Corporation: *See*—
Singer, Richard M.; and Seidl, Charles H., 4,270,333, Cl. 52-818.000.
Kaneko, Yoshio, to Toyo Suisan Kaisha, Ltd. Method for manufacturing quickly cookable dry and porous noodles. 4,271,205, Cl. 426-451.000.
Kang, S. Daniel, to Texas Instruments Incorporated. V-groove semiconductor device with buried channel stop. 4,271,423, Cl. 357-55.000.
Kansai Paint Co., Ltd.: *See*—
Nakagawa, Keizo; Yamano, Katsushi; Watanabe, Takashi; Yamamoto, Kunio; and Inomata, Shigeo, 4,270,953, Cl. 106-16.000.
Kantor, Simon W.: *See*—
Biranowski, Jerome B.; Lorenz, Donald H.; and Kantor, Simon W., 4,271,273, Cl. 521-110.000.
Karkau, Lawrence E., to Collins Industries, Inc. Automatic lift assembly. 4,270,630, Cl. 187-9.00R.
Karl Finke OHG: *See*—
Knepper, Siegfried, 4,271,211, Cl. 427-195.000.
Karl M. Reich Maschinenfabrik GmbH: *See*—
Maurer, Werner, 4,270,687, Cl. 227-113.000.
Kashkina, Nadezhda K.: *See*—
Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V., 4,271,282, Cl. 526-174.000.
Kast, Howard B., to General Electric Company. Integrated control system for a gas turbine engine. 4,270,345, Cl. 60-39.28R.
Kastura, John L.; and Stewart, William R., to General Motors Corporation. Motor vehicle diagnostic and monitoring device having keep alive memory. 4,271,402, Cl. 340-52.00F.
Kasuga, Muneo: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,270,860, Cl. 355-14.00R.
Kataoka, David T.: *See*—
Brandl, Michael C.; Kataoka, David T.; Khanna, Jagdish C.; and Zwettler, Frank J., Jr., 4,270,623, Cl. 180-69.00R.
Kato, Aakihiko: *See*—
Nakane, Masanori; Osumi, Yasuaki; Suzuki, Hiroshi; and Kato, Aakihiko, 4,270,360, Cl. 62-48.000.
Kato, Toshiaki: *See*—
Tabuchi, Katsuhiko; Kato, Toshiaki; and Namba, Kenryo, 4,270,543, Cl. 128-639.000.
Katoh, Masayoshi: *See*—
Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, 4,271,453, Cl. 361-248.000.
Kaufman, Arthur L.: *See*—
Galbraith, Wiley E.; Kaufman, Arthur L.; and Klepper, Herbert, 4,270,859, Cl. 355-10.000.
Kawada, Mitsuru: *See*—
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,271,083, Cl. 260-396.00R.
Kawagoe, Hazime: *See*—
Hirato, Motoshiro; Kawagoe, Hazime; Abe, Kazuo; Sato, Tsuyoshi; Miyake, Yasuhiko; Nagai, Masahiro; Furuichi, Katsuhisa; and Shimojima, Kiyoshi, 4,270,373, Cl. 72-41.000.
Kawai, Hisasi; Ito, Toshimitsu; Sanada, Masakatsu; and Iwase, Kazuo, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method for detecting knocking in internal combustion engine. 4,271,469, Cl. 364-431.000.
Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,270,430, Cl. 84-1.230.
Kawamura, Masanori: *See*—
Tanouchi, Tadao; Kawamura, Masanori; and Hayashi, Masaki, 4,271,170, Cl. 424-263.000.

Kawamura, Satoshi: *See*—
Matsuo, Kohtaro; Kawamura, Satoshi; and Toshine, Tatsumi, 4,271,066, Cl. 260-97.500.
Kawasaki, Sadanobu: *See*—
Mizuno, Shogo; Suzuki, Takao; Kawasaki, Sadanobu; and Takeda, Hideichiro, 4,271,224, Cl. 428-207.000.
Kawashima, Saburo: *See*—
Asano, Makoto; Kawashima, Saburo; Sugimoto, Kenichi; and Kobayashi, Tadashi, 4,271,059, Cl. 260-31.20T.
Kawate, Kenji: *See*—
Matsumoto, Masahiro; Kawate, Kenji; and Jinnouchi, Hidenobu, 4,270,959, Cl. 148-153.000.
Kawazoe, Mitsuo, to Olympus Optical Co., Ltd. Electronic flash. 4,271,376, Cl. 315-241.00P.
Kawolics, Raymond P.; and Basel, Donald R., to Meyer Dairy Products, Co. Liquid filter. 4,271,024, Cl. 210-474.000.
Kearney, John G. Photo-electric burst disc indicator. 4,270,560, Cl. 137-68.00R.
Keasling, Hugh H., to Shell Oil Company. Certain N-(β-phenyl-β-hydroxyethylamino)propiophenones as lipolysis promoters. 4,271,195, Cl. 424-330.000.
Keefe, George E.: *See*—
Almasi, George S.; Bogholtz, Wilhelm E.; and Keefe, George E., 4,271,485, Cl. 365-16.000.
Keeling, Walter W. Process for preparing liver for use as therapeutic agent. 4,271,148, Cl. 424-106.000.
Kehl, Joseph D., to Shure Brothers, Inc. Lever operated stylus guard for phonograph pick-up cartridge. 4,270,758, Cl. 369-170.000.
Kehrman, Robert F.; Farstad, Arnold J.; Gibbons, Michael G.; and Swigert, David L., to Westinghouse Electric Corp. Tunnel roof monitor employing an induction coil extensometer. 4,271,407, Cl. 340-690.000.
Keil, Karl-Heinz: *See*—
Bender, Heinz; Beyerle, Rudi; Keil, Karl-Heinz; Greve, Heinz G.; and Reh, Kuno, 4,271,073, Cl. 260-315.000.
Kelley, Donald J.; Williams, David J.; and Slovenkai, Stephen V., to American Hoechst Corporation. Process for preparing styrenic polymer particles. 4,271,281, Cl. 526-80.000.
Kelley, Lawrence R., to Molins Machine Company, Inc. Fingerless single facer. 4,270,969, Cl. 156-473.000.
Kellogg, Harlan F. Shelf bracket. 4,270,719, Cl. 248-235.000.
Kellwood Company: *See*—
Conner, William R., Jr., 4,270,718, Cl. 248-188.300.
Kelly, Charles A.: *See*—
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,271,307, Cl. 548-224.000.
Kelly, Earl M., to Envirotech Corporation. Sewage treatment system and process. 4,271,027, Cl. 210-609.000.
Kelly, Stephen B., to Pollution Control Products Co. Control method for a reclamation furnace. 4,270,898, Cl. 432-19.000.
Kelsey, Donald R.; and Kreeger, Russell L., to Union Carbide Corporation. Quaternary ammonium graft copolymers for use as flocculants and method of preparing same. 4,271,053, Cl. 260-29.2EP.
Kemmerling, Robert A.: *See*—
Stone, Leonard R.; Aron, Steven J., Jr.; and Kemmerling, Robert A., 4,271,362, Cl. 250-496.000.
Kennametal Inc.: *See*—
Brown, Thomas A.; and Huber, Joseph B., 4,270,378, Cl. 72-267.000.
Kennedy, Eugene F.; and Leach, Bruce E., to Conoco, Inc. Process for producing aluminum oxychloride solutions from low molecular weight aluminum alkoxides. 4,271,138, Cl. 423-462.000.
Kennedy, George D. System and apparatus for cultivating and harvesting oysters. 4,270,488, Cl. 119-4.000.
Kerber, David. Staggered access to endless loop cable transit systems. 4,270,457, Cl. 104-25.000.
Kerfoot, William B., to K-V. Associates, Inc. Integrating corrosion monitor. 4,270,922, Cl. 23-230.00C.
Kern, Roland J., to Monsanto Company. Photoimaging process which uses sulfide containing polymeric films. 4,271,262, Cl. 430-325.000.
Kernforschungszentrum Karlsruhe: *See*—
Nother, Gernot, 4,271,443, Cl. 361-19.000.
Kerr, Neil: *See*—
Hancock, Roger H. Y.; and Kerr, Neil, 4,270,480, Cl. 114-296.000.
Kerres, Siegfried. Smoke generator for smoking food products. 4,270,464, Cl. 110-102.000.
Kersten, Jean: *See*—
Scott, James W.; Bancsi, Joseph A.; and Kersten, Jean, 4,270,725, Cl. 251-6.000.
Kesterson, Albert O.: *See*—
Lancia, Frederick N.; Kesterson, Albert O.; Feeney, Edward K.; and Liebert, Ralph C., 4,270,362, Cl. 62-173.000.
Khanna, Jagdish C.: *See*—
Brandl, Michael C.; Kataoka, David T.; Khanna, Jagdish C.; and Zwettler, Frank J., Jr., 4,270,623, Cl. 180-69.00R.
Khantimirov, Sergei S.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; Khantimirov, Sergei S.; and Shirokov, Alexandr A., 4,271,367, Cl. 310-13.000.
Khoobiar, Sargis, to Halcon Research and Development Corp. Catalyst and process for producing methacrylic acid. 4,271,040, Cl. 252-437.000.
Kidd, William W.: *See*—
Jenkins, John P.; Sabick, Rodney M.; and Kidd, William W., 4,271,440, Cl. 360-92.000.
Kido, Keishiro; Wada, Minoru; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Method for forming images. 4,271,256, Cl. 430-253.000.
Kiehs, Karl: *See*—
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,271,171, Cl. 424-266.000.
Kiffen, Aleidus A.: *See*—
Boomgaard, Ritse E.; Buter, Roelof; and Kiffen, Aleidus A., 4,271,062, Cl. 260-39.00P.
Kihara Sangyo Kabushiki Kaisha: *See*—
Kihara, Sueo, 4,270,966, Cl. 156-251.000.
Kihara, Sueo, to Kihara Sangyo Kabushiki Kaisha; and Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing a shoe. 4,270,966, Cl. 156-251.000.
Kikkawa, Ikuo: *See*—
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,295, Cl. 544-182.000.
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Kilby, Jack S.: *See*—
Johnson, Elwin L.; Kilby, Jack S.; Lathrop, Jay W.; McFerren, John S.; and Myers, David J., 4,270,263, Cl. 29-590.000.
Kilcast, David: *See*—
Mason, Leslie F. A.; Cook, Robert S.; Kilcast, David; Schellenberg, Matthias; and Chylewski, Christoph, 4,271,254, Cl. 430-239.000.
Kim, Young D., to Ashland Oil, Inc. Preparation of furan polymers. 4,271,054, Cl. 260-29.300.
Kimata, Kei; and Fukunaga, Shoichi, to NTN Toyo Bearing Co. Ltd. Method for manufacturing a fuel injection valve. 4,270,257, Cl. 29-157.10R.
Kimball, David V.; and Baughn, Daniel L., to Kimball Industries, Inc. Vibration test bearing table apparatus affording a single degree of freedom test piece path. 4,270,390, Cl. 73-663.000.
Kimball Industries, Inc.: *See*—
Kimball, David V.; and Baughn, Daniel L., 4,270,390, Cl. 73-663.000.
Kimball International, Inc.: *See*—
Southard, James S.; and Bean, Eric R., 4,270,431, Cl. 84-1.240.
Kimura, Masamichi, to Matsushita Electronics Corporation. Electron gun for cathode-ray tube. 4,271,374, Cl. 313-449.000.
Kimura, Takeo: *See*—
Imafuku, Hiroshi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,271,001, Cl. 204-195.00B.
Kimura, Takeshi: *See*—
Setsuda, Tsutomu; Aizawa, Hideyuki; and Kimura, Takeshi, 4,271,318, Cl. 564-468.000.
Kimura, Yoshimi, to Kabushiki Kaisha Fuji Seisakusho. Card holder. 4,270,289, Cl. 40-379.000.
King, Lloyd H., Sr. Inline dispersal valve. 4,270,565, Cl. 137-268.000.
Kirchmayr, Rudolf: *See*—
Felder, Louis; Kirchmayr, Rudolf; and Kusler, Rinaldo, 4,271,294, Cl. 544-87.000.
Kirschner, Helmuth: *See*—
Kramer, Hans; and Kirschner, Helmuth, 4,270,316, Cl. 51-283.00R.
Kisa Tra AB: *See*—
Larsson, Carl, 4,270,612, Cl. 169-45.000.
Kishi, Yasunori: *See*—
Teshima, Toru; Nishizawa, Jun-ichi; and Kishi, Yasunori, 4,271,408, Cl. 340-702.000.
Kissei Pharmaceutical Co., Ltd.: *See*—
Tanouchi, Tadao; Kawamura, Masanori; and Hayashi, Masaki, 4,271,170, Cl. 424-263.000.
Kita, Hisanao: *See*—
Nakazaki, Takamitsu; Kita, Hisanao; and Akutsu, Yoji, 4,271,348, Cl. 219-121.0ED.
Kitajima, Masao: *See*—
Kondo, Asaji; Arai, Fuminori; and Kitajima, Masao, 4,270,920, Cl. 23-230.00B.
Kitterman, Lawrence P. Alarm control system. 4,271,405, Cl. 340-512.000.
Kitts, Leonard W.: *See*—
Erickson, David L.; and Kitts, Leonard W., 4,270,816, Cl. 312-3.000.
Kiwala, Jacob: *See*—
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,271,324, Cl. 568-824.000.
Kiwi Coders Corporation: *See*—
Gill, Bernard J.; Siegal, Burton L.; and Goettsche, Randy P., 4,270,454, Cl. 101-348.000.
Kiyosawa, Kesaomi. Structural joint. 4,270,872, Cl. 403-170.000.
Klaffke, Friedemann: *See*—
Heckel, Klaus; Klaffke, Friedemann; Umann, Walter; and Schwarz, Volker, 4,271,218, Cl. 428-36.000.
Klauser, Gernot: *See*—
Schmidt, Wallace B.; Lewis, William W.; Edmiston, Alex; and Klauser, Gernot, 4,270,938, Cl. 62-22.000.
Klawitter, Ronald R., to Steven Manufacturing Company. Toy driving simulator with brake. 4,270,306, Cl. 46-248.000.
Klebe, Hans: *See*—
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,271,044, Cl. 252-462.000.
Klein, George: *See*—
Manber, Solomon; and Klein, George, 4,271,511, Cl. 371-8.000.

Kleiner, Fredric: *See—*
Fariel, Harry F.; Rudolph, Marvin J.; Hynson, Richard B.; Roy, Pradip K.; and Kleiner, Fredric, 4,271,206, Cl. 426-572.000.
Kleipool, Reinerus J., to Naarden International N.V. 4-Methyl-4-furfurylthio-pentanone-2. 4,271,082, Cl. 260-347.200.
Klepper, Herbert: *See—*
Galbraith, Wiley E.; Kaufman, Arthur L.; and Klepper, Herbert, 4,270,859, Cl. 355-10.000.
Klimek, Edmund J., to Borg-Warner Corporation. Method of manufacturing a swash plate assembly. 4,270,255, Cl. 29-156.50A.
Klockner-Humboltd-Deutz AG: *See—*
Ansen, Jakob; Duill, Helmut; Fasbender, Heinz; and Graf, Ruprecht, 4,270,466, Cl. 110-193.000.
Kmetz, Allan R., to BBC Brown, Boveri & Co. Ltd. Digital voltmeter with electro-optical indication of the waveform. 4,271,391, Cl. 324-103.00P.
Knauff, Robert J. Toy with reversible driven hoist. 4,271,378, Cl. 318-10.000.
Knauth, Berthold A. Fluid flow regulating systems. 4,270,694, Cl. 236-49.000.
Knepper, Siegfried, to Karl Finke OHG. Process for making plastic resin-dyestuff concentrates for use in the dyeing of plastic resins. 4,271,211, Cl. 427-195.000.
Knickmeyer, William W.; Spanswick, James; and Stephens, James R., to Standard Oil Company (Indiana). Esterification of phenol catalyzed with a strong base plus boron. 4,271,311, Cl. 560-86.000.
Knief, Enno A., to Eaton Corporation. Counter drive mechanism. 4,270,399, Cl. 74-129.000.
Knobl, Alois; Zeitner, Alfred; Krockow, Helmut; and Schmaus, Hermann, to Draloric Electronic GmbH. Capacitor of disk shape with liquid cooling. 4,271,454, Cl. 361-274.000.
Knoth, Dale W.: *See—*
Lipson, Melvin A.; and Knoth, Dale W., 4,270,985, Cl. 204-15.000.
Kobayashi, Hidehiko: *See—*
Imafuku, Hiroshi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,271,001, Cl. 204-195.00B.
Kobayashi, Hiroshi. Paper stack binding and folding device. 4,270,742, Cl. 270-37.000.
Kobayashi, Hiroto, to Walbro Far East, Inc. Carburetor. 4,271,096, Cl. 261-44.00G.
Kobayashi, Tadashi: *See—*
Asano, Makoto; Kawashima, Saburo; Sugimoto, Kenichi; and Kobayashi, Tadashi, 4,271,059, Cl. 260-31.20T.
Kobayashi, Takashi: *See—*
Kondo, Koichi; Yoshida, Isamu; and Kobayashi, Takashi, 4,270,923, Cl. 23-230.00B.
Kobayashi, Takeshi, to Walbro Far East, Inc. Carburetor. 4,271,093, Cl. 261-34.00R.
Kobayashi, Yoshinobu. Process for preparing titanium carbide-tungsten carbide base powder for cemented carbide alloys. 4,270,952, Cl. 75-203.000.
Kobayashi, Yuzo: *See—*
Minohara, Kiyomi; Sugiyama, Akira; Nakai, Hiroshi; Iida, Masajiro; Morimatsu, Hideharu; and Kobayashi, Yuzo, 4,271,490, Cl. 367-122.000.
Kobelt, Jacob. Modular caliper brake assembly. 4,270,631, Cl. 188-72.900.
Kobinger, Walter: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Arndts, Dietrich; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,271,175, Cl. 424-273.00R.
Koch, Robert M.: *See—*
Lay, Roger F.; Jarecki, John S.; and Koch, Robert M., 4,270,652, Cl. 198-486.000.
Koda, Hirokazu: *See—*
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,270,472, Cl. 112-158.00E.
Koemans, Joseph M.: *See—*
Himmelbauer, Erich E.; and Koemans, Joseph M., 4,271,373, Cl. 313-432.000.
Koenig, Karl-Heinz: *See—*
Baumann, Annegrit; Kiehs, Karl; Adolphi, Heinrich; and Koenig, Karl-Heinz, 4,271,171, Cl. 424-266.000.
Koenuma, Masao, to Asahi Seimitsu Kabushiki Kaisha. Universal parallel ruler with converted display of displacement. 4,270,277, Cl. 33-439.000.
Koide, Samuel: *See—*
Tsong, Yun-Yen; Talwar, Gursaran P.; Koide, Samuel; and Segal, Sheldon J., 4,271,069, Cl. 260-112.50R.
Koivisto, Maija K.: *See—*
Honkanen, Erkki J.; Pippuri, Aino K.; Kairisalo, Pekka J.; Thaler, Heinrich; Koivisto, Maija K.; and Tuomi, Sirpa A., 4,271,300, Cl. 544-291.000.
Kokaly, Frederick L.: *See—*
Adams, Carl P.; Allen, Royce D.; and Kokaly, Frederick L., 4,270,616, Cl. 172-811.000.
Kokusai Denshin Denwa Co., Ltd.: *See—*
Konishi, Kazunori, 4,270,865, Cl. 400-63.000.
Kokusan Denki Co., Ltd.: *See—*
Ikeda, Yoshihiko; and Nitou, Hiroyasu, 4,270,265, Cl. 29-840.000.
Nanjo, Hirotoshi; and Tsuji, Toshikazu, 4,270,510, Cl. 123-648.000.
Kolaian, Jack H.; and Love, Richard F., to Texaco Inc. Polycarboxylic acids and esters in detergent formulations and their use. 4,271,032, Cl. 252-174.190.
Kolze, Lawrence A., to Eaton Corporation. Valve assembly. 4,270,570, Cl. 137-597.000.
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, to Canon Kabushiki Kaisha. Copying apparatus for sheet originals and thicker originals. 4,270,857, Cl. 355-8.000.
Kondo, Asaji; Arai, Fuminori; and Kitajima, Masao, to Fuji Photo Film Co., Ltd. Integrated material for chemical analysis and a method of using the same. 4,270,920, Cl. 23-230.00B.
Kondo, Koichi; Yoshida, Isamu; and Kobayashi, Takashi, to Takeda Chemical Industries, Ltd. Pretreatment agent for subject fluid in pregnancy test. 4,270,923, Cl. 23-230.00B.
Konejukka Oy: *See—*
Sassi, Kari, 4,270,638, Cl. 192-45.100.
Konishi, Kazunori, to Kokusai Denshin Denwa Co., Ltd. Editing printer. 4,270,865, Cl. 400-63.000.
Kopp, Larry F. Animal feed bowls. 4,270,490, Cl. 119-61.000.
Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Arndts, Dietrich; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,271,175, Cl. 424-273.00R.
Koppers Company, Inc.: *See—*
Dressler, Hans, 4,271,285, Cl. 528-175.000.
Korbanova, Zinaida N.: *See—*
Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V., 4,271,282, Cl. 526-174.000.
Kordt, Hans-Herbert; and Stenz, Paul P., to C. A. Weidmuller KG. Rail-mounted electrical terminals. 4,270,835, Cl. 339-198.0GA.
Korelskaya, Galina I.: *See—*
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.
Koroscil, Anthony: *See—*
Coleman, Denis; and Koroscil, Anthony, 4,271,056, Cl. 260-29.6AN.
Korzon, Edward S., to Dura Plastics of New York, Inc. Display stand with easily adjusted shelves. 4,270,463, Cl. 108-96.000.
Koschik, Achim: *See—*
Trabitzsch, Hans; Frieser, Josef; Koschik, Achim; and Plainer, Hermann, 4,271,058, Cl. 260-29.60M.
Koshimizu, Naganori, to Tokico Ltd. Master cylinder. 4,270,354, Cl. 60-581.000.
Kosovtsev, Vladimir V.: *See—*
Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V., 4,271,282, Cl. 526-174.000.
Kotobuki Sangyo Kabushiki Kaisha: *See—*
Shimada, Hiroaki, 4,270,376, Cl. 72-231.000.
Kovtunenko, Leonid V.: *See—*
Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V., 4,271,282, Cl. 526-174.000.
Kraals, Ralph. Dispensing holder for a collapsible tube. 4,270,672, Cl. 222-95.000.
Kraft, Derald H.; and Rinaldo, Daniel M., to Dyneer Corporation. Belt tensioner construction. 4,270,906, Cl. 474-135.000.
Kraft, Karl J.: *See—*
Hoffmann, Erwin; Krippl, Kurt; Kraft, Karl J.; Gabrysch, Gerd; and Redmer, Frank, 4,270,889, Cl. 425-115.000.
Kraicer, Alec: *See—*
Bradshaw, Robert F. D.; and Kraicer, Alec, 4,271,357, Cl. 250-287.000.
Kramer, Hans; and Kirschner, Helmuth, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for evening out the amount of material removed from discs in polishing. 4,270,316, Cl. 51-283.00R.
Krauss, Karl-Heinz, to Siemens Aktiengesellschaft. Circuit arrangement for the formation of check bits for binary data. 4,271,517, Cl. 371-37.000.
Kreeger, Russell L.: *See—*
Kelsey, Donald R.; and Kreeger, Russell L., 4,271,053, Cl. 260-29.2EP.
Krippl, Kurt: *See—*
Hoffmann, Erwin; Krippl, Kurt; Kraft, Karl J.; Gabrysch, Gerd; and Redmer, Frank, 4,270,889, Cl. 425-115.000.
Krockow, Helmut: *See—*
Knobl, Alois; Zeitner, Alfred; Krockow, Helmut; and Schmaus, Hermann, 4,271,454, Cl. 361-274.000.
Krohn, Manfred, to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Process and apparatus for the aligning of fish. 4,270,650, Cl. 198-388.000.
Krueger, Ellison F. Method for the salvage and restoration of integrated circuits from a substrate. 4,270,260, Cl. 29-403.400.
Krulick, Steven E.: *See—*
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., 4,270,596, Cl. 165-1.000.
Krupick, Walter J., to Singer Company, The. Low cost flexure assembly. 4,270,392, Cl. 74-5.00F.

Krupp-Koppers GmbH: *See*—
Forster, Manfred; Linke, Adolf; and Geidies, Ulrich, 4,270,558, Cl. 137-2.000.

Kruse, Uno: *See*—
Herman, Daniel F.; and Kruse, Uno, 4,270,977, Cl. 162-168.00R.

Kubo, Masaharu: *See*—
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,270,262, Cl. 29-571.000.

Kuchenbecker, Morris W., to American Can Company. Reclosable dispensing blister card package. 4,270,659, Cl. 206-538.000.

Kugler, Manfred, to Jean Walterscheid GmbH. Method of and device for forming an integral lubricating nipple on a tubular member. 4,270,374, Cl. 72-68.000.

Kuhns, John P. Heat engine and thermodynamic cycle. 4,270,351, Cl. 60-517.000.

Kukla, Thomas S. Apparatus for thorough mixture of a liquid with a gas. 4,271,099, Cl. 261-76.000.

Kummer, Werner: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Arndts, Dietrich; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,271,175, Cl. 424-273.00R.

Kunimoto, Go; and Mori, Fumio, to Toyo Seikan Kaisha, Ltd. Peelable adhesive structure and method for its manufacture. 4,270,665, Cl. 215-347.000.

Kunioka, Kazuo: *See*—
Shimotsuma, Teruo; Kunioka, Kazuo; Nishio, Hiroaki; and Okuyama, Yasuo, 4,270,980, Cl. 201-28.000.

Kunkel, Heinrich: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; and Kunkel, Heinrich, 4,270,815, Cl. 308-213.000.

Kunze, Johannes: *See*—
Thyes, Marco; Gries, Josef; Lehmann, Hans D.; Lenke, Dieter; and Kunze, Johannes, 4,271,163, Cl. 424-250.000.

Kuraray Co., Ltd.: *See*—
Tokitoh, Yasuo; Yoshimura, Noriaki; and Tamura, Masuhiko, 4,271,320, Cl. 568-426.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,271,151, Cl. 424-177.000.
Kihara, Sueo, 4,270,966, Cl. 156-251.000.

Kurie, Eugene J., to Midland-Ross Corporation. Apparatus used in the treatment of a continuous strip of metal and method of use thereof. 4,270,317, Cl. 51-426.000.

Kurose, Morio; Ejiri, Koichi; and Maeda, Mamoru, to Ricoh Co., Ltd. Digital copying machine. 4,271,436, Cl. 358-296.000.

Kurz, Otto: *See*—
Dommer, Hans-Martin; and Kurz, Otto, 4,270,413, Cl. 74-828.000.

Kusler, Rinaldo: *See*—
Felder, Louis; Kirchmayr, Rudolf; and Kusler, Rinaldo, 4,271,294, Cl. 544-87.000.

Kuznetzoff, Philip, to Burroughs Corporation. Method of forming conductors in slots in a plate. 4,270,823, Cl. 316-19.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; Hayashi, Atsuko, heir; Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, 4,271,310, Cl. 560-71.000.

L. Schuler GmbH: *See*—
Dommer, Hans-Martin; and Kurz, Otto, 4,270,413, Cl. 74-828.000.

La Telemecanique Electrique: *See*—
Bernard, Pierre J., 4,270,780, Cl. 292-202.000.

La Barge, Michael A. Energy management controller for centrifugal water chiller. 4,270,361, Cl. 62-158.000.

Laboratoire L. Lafon: *See*—
Lafon, Victor, 4,271,194, Cl. 424-326.000.

LaConte, Richard J., to Boeing Company, The. Directional release toggle latch. 4,270,782, Cl. 292-288.000.

Laehy, Peter; and Dag, Stefan A., to Rapidgate, Inc. Pivotable delineator post. 4,270,873, Cl. 404-10.000.

Lafon, Victor, to Laboratoire L. Lafon. Sedative compositions containing (3,4-dichlorophenylsulphinyl)-acetamidoxime and its addition salts and method of use. 4,271,194, Cl. 424-326.000.

Lai, Ban-Yen: *See*—
Husain, Matloob; Lai, Ban-Yen; and Schmitt, Richard L., 4,270,358, Cl. 60-693.000.

L'Aiglon: *See*—
Bayon, Patrice M., 4,270,657, Cl. 206-386.000.

Lake Center Industries: *See*—
Sorensen, Ronald L.; and Whitfield, Dwight, 4,270,783, Cl. 292-336.300.

Lakin, Ira; and Blair, Gilbert, to Dravo Corporation. Turret type, single spot coke oven door machine and guide. 4,270,982, Cl. 202-241.000.

LaManna, Richard J.; Drillick, Jacob H.; and Polad, Michael D., to Data Card Corporation. Automatic embossing system. 4,271,012, Cl. 209-653.000.

Lambert, Richard J.; and Martens, John A., to Minnesota Mining and Manufacturing Company. Plastic film label stock. 4,271,223, Cl. 428-207.000.

Lampke, George G.: *See*—
Glass, Jeremy M.; Lampke, George G.; and St. Germain, Roger L., 4,271,412, Cl. 343-5.0FT.

Lancaster, Arthur, to Budd Company, The. Heater for pre-heating fuel with a heated liquid. 4,270,601, Cl. 165-154.000.

Lancia, Frederick N.; Kesterson, Albert O.; Feeney, Edward K.; and Liebert, Ralph C., to Liebert Corporation. Control system for an air conditioning system having supplementary, ambient derived cooling. 4,270,362, Cl. 62-173.000.

Lane, George A.; and Rossow, Harold E., to Dow Chemical Company, The. Hydrated $Mg(NO_3)_2$ reversible phase change compositions. 4,271,029, Cl. 252-70.000.

Lang, Gusztav; and Mauthe, Peter, to Hilti Aktiengesellschaft. Method of securing an expansion dowel including a metallic expansion sleeve. 4,270,331, Cl. 52-744.000.

Langert, Albert, to Girling Limited. Internal shoe drum brakes. 4,270,632, Cl. 188-79.50P.

Lanzi, Ronald G.; and Vernia, Peter, to General Motors Corporation. Method of making a dielectric containing material for RF suppression. 4,270,266, Cl. 29-875.000.

Laqua, Arnold: *See*—
Bertelmann, Gunter; Holtschmidt, Ulrich; and Laqua, Arnold, 4,271,190, Cl. 424-316.000.

Larsen, Darrell R., to Minneapolis Electric Steel Castings Company. Shell liner assembly for ore grinding mills. 4,270,705, Cl. 241-183.000.

Larsen, Lawrence E.: *See*—
Jacobi, John H.; and Larsen, Lawrence E., 4,271,389, Cl. 324-58.50A.

Larson, Jay M.: *See*—
Narasimhan, Sundaram L.; and Larson, Jay M., 4,270,496, Cl. 123-90.510.

Larsson, Carl, to Kisa Tra AB. Method for preventing the spontaneous combustion of stored organic and inorganic substances. 4,270,612, Cl. 169-45.000.

Lassau, Christian: *See*—
Durand, Daniel; Hillion, Gerard; Lassau, Christian; and Sajus, Lucien, 4,271,323, Cl. 568-816.000.

Lathrop, Jay W.: *See*—
Johnson, Elwin L.; Kilby, Jack S.; Lathrop, Jay W.; McFerren, John S.; and Myers, David J., 4,270,263, Cl. 29-590.000.

Laurel Bank Machine Co., Ltd.: *See*—
Watanabe, Kenkichi, 4,270,557, Cl. 133-8.00D.

Lavoisey, Yves; and Nierlich, Jean, to Saint-Gobain Industries. Sheet rupturing. 4,270,682, Cl. 225-1.000.

Lawrence, James D., to Dailey Oil Tools, Inc. Constant bottom contact tool. 4,270,620, Cl. 175-322.000.

Lay, Roger F.; Jarecki, John S.; and Koch, Robert M., to AM International, Inc. Automatic collator unloader. 4,270,652, Cl. 198-486.000.

Lazzaro, Philip T. Hair fastener clip for hair roller. 4,270,554, Cl. 132-40.000.

Leach, Bruce E.: *See*—
Kennedy, Eugene F.; and Leach, Bruce E., 4,271,138, Cl. 423-462.000.

Leber, Fritz, to Zahnradfabrik Friedrich-Shafen Aktiengesellschaft. Lubricating oil flow control device, especially for a speed-change transmission operating in an oil bath. 4,270,647, Cl. 192-113.00B.

Leclercq, Jacques: *See*—
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,172, Cl. 424-267.000.
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,173, Cl. 424-267.000.

Leclercq, Lucien E.: *See*—
Boudart, Michel; and Leclercq, Lucien E., 4,271,041, Cl. 252-438.000.

Lee, Chi-long: *See*—
Homan, Gary R.; and Lee, Chi-long, 4,271,289, Cl. 528-374.000.

Lee, George T.: *See*—
Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., 4,270,899, Cl. 432-58.000.

Lee, Jimmy L. Automotive air conditioning apparatus. 4,271,452, Cl. 361-231.000.

Lee, Kyu H.: *See*—
Aid, James D.; and Lee, Kyu H., 4,271,014, Cl. 210-86.000.

Lee, Litton T.: *See*—
Garter, Robert F.; Hamparian, Nshan; and Lee, Litton T., 4,270,494, Cl. 123-41.350.

Lee, Maw H., to Scott & Fetzer Company, The. Power factor controller for induction motor. 4,271,386, Cl. 318-729.000.

Leeds & Northrup Company: *See*—
Ross, Charles W., 4,271,473, Cl. 364-494.000.

Leger, Andre: *See*—
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,271,156, Cl. 424-246.000.
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,271,167, Cl. 424-263.000.

Legueu, Paul. Chassis-cab automotive vehicle with a double rear axle. 4,270,765, Cl. 280-137.000.

Lehmacher, Hans. Apparatus for the stacking and connection of synthetic-resin foil or sheet bags. 4,270,908, Cl. 493-204.000.

Lehmann, Hans D.: *See*—
Thyes, Marco; Gries, Josef; Lehmann, Hans D.; Lenke, Dieter; and Kunze, Johannes, 4,271,163, Cl. 424-250.000.

Leibinger, Berthold: *See*—
Herb, Eugen; and Leibinger, Berthold, 4,270,253, Cl. 29-26.00A.

Leichnitz, Kurt, to Dragerwerk Aktiengesellschaft. Indicator device for the quantitative determination of metal cyanides in aerosol form. 4,271,125, Cl. 422-86.000.

Leidich, Arthur J., to RCA Corporation. Amplifier circuit. 4,271,394, Cl. 330-258.000.

Leikin, Jury A.: *See*—
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.

Leland Stanford Junior University, The Board of Trustees of: *See*—
Boudart, Michel; and Leclercq, Lucien E., 4,271,041, Cl. 252-438.000.

Lemelson, Jerome H. Disposable syringe. 4,270,536, Cl. 128-218.00N.

Lenke, Dieter: *See*—
Thyes, Marco; Gries, Josef; Lehmann, Hans D.; Lenke, Dieter; and Kunze, Johannes, 4,271,163, Cl. 424-250.000.

Leonard, Mark, to Hewlett-Packard Company. Bistable hysteretic integrated circuit. 4,271,364, Cl. 307-355.000.

Leonard, Ronald W.: *See*—
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., 4,270,596, Cl. 165-1.000.

Leonhart, Xaver F. Coin operating mechanism providing controlled play of multiple games from a single coin. 4,270,648, Cl. 194-1.00C.

Lermann, Peter: *See*—
Stemme, Otto; Staudacher, Frank; Lermann, Peter; and Wagensonner, Eduard, 4,270,854, Cl. 354-76.000.

Les Laboratoires Meram: *See*—
Durlach, Jean P., 4,271,189, Cl. 424-315.000.

Lesher, George Y.; and Opalka, Chester J., Jr., to Sterling Drug Inc. Selected 3-acylamino-5-[4(or 3)-pyridinyl]-2(1H)-pyridinones. 4,271,168, Cl. 424-263.000.

Lester, Andrew W.: *See*—
Butler, Denton G.; and Lester, Andrew W., 4,270,483, Cl. 118-46.000.

Leutenegger, Willi: *See*—
Zurbuchen, Jacques; and Leutenegger, Willi, 4,270,236, Cl. 8-159.000.

Levan, Jean-Pol: *See*—
Eumurian, Gregoire; and Levan, Jean-Pol, 4,271,503, Cl. 370-74.000.

Leveque, J. Howard, to H.F. Communications Corporation. Method and apparatus for digitally implementing a linked compressor-expander telecommunications system. 4,271,499, Cl. 370-7.000.

Lever Brothers Company: *See*—
Brierley, John M.; Parsons, John S.; Trueman, James R.; and Jones, Robert A., 4,271,030, Cl. 252-98.000.

Leverenz, Melvin E., to Diamond Crystal Salt Co. Powder dispensing apparatus. 4,270,486, Cl. 118-679.000.

Lewinton, Colin H.; and Savit, Joseph, to Domtar Inc. Fibrous electrophotographic sheet with a cellulose nitrate coating. 4,271,250, Cl. 430-127.000.

Lewis, Dale E. Retractable seat structure. 4,270,794, Cl. 297-14.000.

Lewis, Edwin C., II, to Weatherford/DMC. High pressure piston and seal. 4,270,440, Cl. 92-87.000.

Lewis, Eugene J. Poultry breast splitting apparatus. 4,270,243, Cl. 17-11.000.

Lewis, Roger N.: *See*—
Pastorino, Ronald L.; Lewis, Roger N.; and Abma, Charles B., 4,271,279, Cl. 525-387.000.

Lewis, William W.: *See*—
Schmidt, Wallace B.; Lewis, William W.; Edmiston, Alex; and Klauser, Gernot, 4,270,938, Cl. 62-22.000.

Liberfarb, Zilek B.: *See*—
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Pogorelova, Iraida S.; Pritsker, Petr Y.; Kandrusev, Igor I.; and Liberfarb, Zilek B., 4,270,349, Cl. 60-384.000.

Liebert Corporation: *See*—
Lancia, Frederick N.; Kesterson, Albert O.; Feeney, Edward K.; and Liebert, Ralph C., 4,270,362, Cl. 62-173.000.

Liebert, Ralph C.: *See*—
Lancia, Frederick N.; Kesterson, Albert O.; Feeney, Edward K.; and Liebert, Ralph C., 4,270,362, Cl. 62-173.000.

Liebherr-Hydraulikbagger GmbH: *See*—
Mieger, Rolf, 4,270,286, Cl. 37-103.000.

Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ulrich; Hell, Insa; and Hempel, Reinhard, to Kali-Chemie Pharma GmbH. N1-Benzoyl-N2-phenyldiaminopropanols and pharmaceutical compositions thereof, and processes for their preparation. 4,271,193, Cl. 424-324.000.

Life Savers, Inc.: *See*—
Cherukuri, Subraman R.; Friello, Dominick R.; Jewell, Walter; and Mackay, Donald A. M., 4,271,198, Cl. 426-3.000.
Cherukuri, Subraman R.; Vink, Walter; Friello, Dominick R.; and Mackay, Donald A. M., 4,271,199, Cl. 426-5.000.
Puglia, Wayne J.; Witzel, Frank; and Mackay, Donald A. M., 4,271,142, Cl. 424-14.000.
Vink, Walter; Spooner, Leonard; and Mackay, Donald A. M., 4,270,956, Cl. 127-29.000.

Ligon, Samuel B., to Jokari/U.S., Inc. Tethered ball game and apparatus. 4,270,757, Cl. 273-411.000.

Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Arndts, Dietrich; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,271,175, Cl. 424-273.00R.

Lim, Linda W., to GTE Automatic Electric Laboratories, Inc. Apparatus for screening paste solder onto leaded hybrid substrates. 4,270,465, Cl. 110-127.000.

Lindberg, John E., to U.S.A. 161 Developments Ltd. Combustion control system. 4,270,508, Cl. 123-568.000.

Lindemann, Klaus: *See*—
Ruhnau, Gerhard; Gudat, Wolfgang; Lindemann, Klaus; and Saba, Manfred, 4,270,810, Cl. 303-106.000.

Linder, Ernst: *See*—
Hertfelder, Wilhelm; Junginger, Erich; and Linder, Ernst, 4,270,726, Cl. 251-30.000.

Lindstrom, Olle B., to AB Olle Lindstrom. Chemoelectric cell. 4,271,003, Cl. 204-265.000.

Linke, Adolf: *See*—
Forster, Manfred; Linke, Adolf; and Geidies, Ulrich, 4,270,558, Cl. 137-2.000.

Lintonbon, Robert F.; and Shore, David, to Ferakarn Limited. Waste gas recovery system. 4,270,884, Cl. 417-15.000.

Lipschutz, Charles, to Louisville Manufacturing Co., Inc. Method of surface ornamented cap. 4,270,229, Cl. 2-195.000.

Lipshield, Eugene C.; and Boyer, Billy G., to Orscheln Co. Brake cable operating means affording a mechanical advantage. 4,270,406, Cl. 74-516.000.

Lipson, Melvin A.; and Knoth, Dale W., to Dynachem Corporation. Screen printing of photopolymerizable inks. 4,270,985, Cl. 204-15.000.

Liquid Paper Corporation: *See*—
Sharlow, Roger C., 4,270,707, Cl. 242-56.900.

Liston, Max D.: *See*—
Blackburn, Wayne E.; Liston, Max D.; and Stark, William A., 4,270,564, Cl. 137-240.000.

Liston Scientific Corp.: *See*—
Blackburn, Wayne E.; Liston, Max D.; and Stark, William A., 4,270,564, Cl. 137-240.000.

Litton Systems, Inc.: *See*—
DiMeo, Frank N., 4,271,370, Cl. 310-266.000.

Livesay, J. D.: *See*—
Widdowson, Richard E.; Connolly, James B.; Schlotterbeck, Earl S.; and Livesay, J. D., 4,270,934, Cl. 55-316.000.

Livingston, Danny K.: *See*—
Hawk, Charles E.; and Livingston, Danny K., 4,270,386, Cl. 73-204.000.

Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Pogorelova, Iraida S.; Pritsker, Petr Y.; Kandrusev, Igor I.; and Liberfarb, Zilek B. Distributing device of vehicle hydraulic control system. 4,270,349, Cl. 60-384.000.

Lo Biondo, Joseph V.: *See*—
Lo Biondo, Salvatore J.; and Lo Biondo, Joseph V., 4,270,244, Cl. 17-52.000.

Lo Biondo, Salvatore J.; and Lo Biondo, Joseph V. Method and apparatus for macerating meat. 4,270,244, Cl. 17-52.000.

Lockheed Missiles & Space Company, Inc.: *See*—
Trautwein, Wolfgang, 4,270,811, Cl. 305-11.000.

Lockwood, George C.: *See*—
Craycraft, Donald G.; Lockwood, George C.; and Donaldson, Darrel D., 4,271,487, Cl. 365-189.000.

Lohmann, Dieter; and Wyler, Siegfried, to Ciba-Geigy Corporation. Silanes containing imide groups. 4,271,074, Cl. 260-326.260.

Long, Alvin L., to Long, Loring C. Mouse trap. 4,270,299, Cl. 43-58.000.

Long, Loring C.: *See*—
Long, Alvin L., 4,270,299, Cl. 43-58.000.

Looschen, Floyd W., to Burroughs Corporation. Shift-register transmitter for use in a high speed, low noise digital data communication system. 4,271,510, Cl. 370-110.000.

L'Oreal: *See*—
Bore, Pierre; and De Labbey, Arnaud, 4,270,919, Cl. 23-230.00B.

Lorenz, Donald H.: *See*—
Biranowski, Jerome B.; Lorenz, Donald H.; and Kantor, Simon W., 4,271,273, Cl. 521-110.000.

Lorenz, Harald H.: *See*—
Coulter, James L.; and Lorenz, Harald H., 4,270,633, Cl. 188-79.5GC.

Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus, to HOBEG Hochtemperaturreaktor-Brennelement GmbH. Process for the coating of particles for the production of fuel and/or absorbing elements for nuclear reactors and apparatus therefor. 4,271,207, Cl. 427-6.000.

Loth, Kjeld; and Loth, Peter. Apparatus for automatic evisceration of killed poultry. 4,270,242, Cl. 17-11.000.

Loth, Peter: *See*—
Loth, Kjeld; and Loth, Peter, 4,270,242, Cl. 17-11.000.

Lotsch, Wolfgang; and Hilbert, Peter, to BASF Aktiengesellschaft. Preparation of pigmentary form isoindoline. 4,271,301, Cl. 544-296.000.

Lotsch, Wolfgang, to BASF Aktiengesellschaft. Isoindoline colorants. 4,271,309, Cl. 548-364.000.

Lotspiech, Jeffrey B., to International Business Machines Corporation. Method and apparatus for rotating the scan format of digital images. 4,271,476, Cl. 364-515.000.

Lotz, Helmut, to Bosch-Siemens Hausgerate GmbH. Housed clothes dryer. 4,270,282, Cl. 34-86.000.

Louisville Manufacturing Co., Inc.: *See*—
Lipschutz, Charles, 4,270,229, Cl. 2-195.000.

Love, Richard F.: *See*—
Kolaian, Jack H.; and Love, Richard F., 4,271,032, Cl. 252-174.190.

Lowe, Charles L., to Grayson, Jacob H., a part interest. Generating vapor of a volatile normally liquid fuel and operating an internal combustion engine therewith. 4,270,506, Cl. 123-523.000.

Lowery, Robert D., to Marquette Metal Products. Adjustable spring clutch. 4,270,637, Cl. 192-41.00S.

Lown, Bernard: *See*—
Wurtman, Richard J.; and Lown, Bernard, 4,271,192, Cl. 424-319.000.

Lowy, Stephen D. Golf putting aid apparatus for the visually handicapped. 4,270,751, Cl. 273-34.00R.

Loyd, Ellis R. Combination power saw and chain saw and adapter device and methods of making and using the same. 4,270,270, Cl. 30-122.000.

Lucas Industries Limited: *See*—
James, Haydn, 4,271,459, Cl. 362-346.000.
Seilly, Alec H., 4,270,502, Cl. 123-357.000.
Skinner, Robert T. J., 4,270,886, Cl. 417-462.000.
Thomas, Alfred W.; and Op den Camp, Lutz E. A., 4,270,438, Cl. 91-49.000.

Luckhurst, Geoffrey A.: *See*—
Outram, Stephen H.; and Luckhurst, Geoffrey A., 4,271,392, Cl. 324-115.000.

Ludy, Andrew W. Nail holder for hammers. 4,270,587, Cl. 145-30.00R.

Luijten, Waltherus J. Th. H.; and Smid, Joost, to Ultra-Centrifuge Nederland N.V. Molecular pump or, respectively, gas-tight sealing arrangement for a body placed in a housing and rapidly rotating about an axis. 4,270,882, Cl. 415-72.000.

Lukacsek, Patricia A. Apparatus for culturing and examining fungi. 4,271,270, Cl. 435-294.000.

Lukas, Walter: *See*—
Aignesberger, Alois; Lukas, Walter; and Weinberg, Ekkehard, 4,270,954, Cl. 106-47.00R.

Luke, Virgil E. Pot separator. 4,270,669, Cl. 221-13.000.

Lunel, Jean: *See*—
Belloc, Andre; Florent, Jean; Lunel, Jean; Mancy, Denise; and Palla, Jean-Claude, 4,271,067, Cl. 260-112.00R.

Luschen, Joseph G., to ALZA Corporation. Process for forming a passageway in an osmotic device. 4,271,113, Cl. 264-112.000.

Lussier, Roger J.: *See*—
Vaughan, David E. W.; Lussier, Roger J.; and Magee, John S., Jr., 4,271,043, Cl. 252-455.00R.

Lyhus, Arlan J. Information collection and storage system with memory test circuit. 4,271,512, Cl. 371-21.000.

Lynell Medical Technology Inc.: *See*—
Poler, Stanley, 4,270,230, Cl. 3-13.000.

Lyon, Fred K.; and Lyon, Ralph E. Rotational molding of cylindrical objects having swirled textured outer surfaces. 4,271,117, Cl. 264-275.000.

Lyon, Ralph E.: *See*—
Lyon, Fred K.; and Lyon, Ralph E., 4,271,117, Cl. 264-275.000.

Lyons, Thomas F., Jr.: *See*—
Dickinson, Thorn W.; McLarty, Daniel R.; and Lyons, Thomas F., Jr., 4,270,415, Cl. 74-867.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Difflipp, Kurt; and Greiner, Harry M., 4,270,450, Cl. 101-142.000.

Mabery, Thomas L.; and Jackson, Francis B., to Combustion Engineering, Inc. Method of forming variably rifled tubes. 4,270,690, Cl. 228-173.00F.

Macey, James D.: *See*—
Ahlenfeld, Carl B.; and Macey, James D., 4,270,756, Cl. 273-326.000.

Mackay, Donald A. M.: *See*—
Cherukuri, Subraman R.; Friello, Dominick R.; Jewell, Walter; and Mackay, Donald A. M., 4,271,198, Cl. 426-3.000.
Cherukuri, Subraman R.; Vink, Walter; Friello, Dominick R.; and Mackay, Donald A. M., 4,271,199, Cl. 426-5.000.
Hopkins, Walter; Friello, Dominick R.; Cherukuri, Subraman R.; Roy, Raymond L.; and Mackay, Donald A. M., 4,271,197, Cl. 426-3.000.
Puglia, Wayne J.; Witzel, Frank; and Mackay, Donald A. M., 4,271,142, Cl. 424-14.000.
Vink, Walter; Spooner, Leonard; and Mackay, Donald A. M., 4,270,956, Cl. 127-29.000.

MacLachlan, James D., to Du Pont de Nemours, E. I., and Company. Fluoroelastomer composition containing oxirane acid acceptor. 4,271,275, Cl. 525-112.000.

MacMillan, Richard W., to Siemens Aktiengesellschaft. Switching arrangement for the input of interrupt commands and the output of interrupt acknowledgment for computer systems. 4,271,464, Cl. 364-200.000.

MacRae, Joseph A.: *See*—
Gill, Donald H.; MacRae, Joseph A.; and Cottrill, Compton J., 4,270,591, Cl. 411-112.000.

Maddox, Jim, Jr.: *See*—
Cardenas, Ricardo L.; Harnsberger, Bobby G.; and Maddox, Jim, Jr., 4,270,607, Cl. 166-273.000.

Maeda, Hiroshi; Ariga, Nagao; Oikawa, Hiroshi; and Tominaga, Hidemitsu, to Dainippon Ink & Chemicals, Inc. 5-(2,5-Dioxotetrahydrofuryl)-3-methyl-3-cyclohexene-1,2-dicarboxylic anhydride. 4,271,079, Cl. 260-346.300.

Maeda, Mamoru: *See*—
Kurose, Morio; Ejiri, Koichi; and Maeda, Mamoru, 4,271,436, Cl. 358-296.000.

Maeda, Tooru, to Toyo Kogyo Co., Ltd. Idle adjusting device for a carburetor. 4,271,095, Cl. 261-41.00D.

Maeda, Toshinobu; and Matsuoka, Yoshifumi, to Matsushita Electric Industrial Co., Ltd. Speed control circuit for phase-locked loop motor drive systems. 4,271,382, Cl. 318-318.000.

Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, to Nippon Telegraph and Telephone Public Corporation; Fujitsu Limited; Oki Electric Industry Co., Ltd.; and Nippon Electric Co., Ltd. Method and apparatus for carrying out loopback test. 4,271,513, Cl. 371-22.000.

Maender, Otto W.; and Morita, Eiichi, to Monsanto Company. Vulcanizable rubber compositions inhibited from premature vulcanization by methylene thioethers. 4,271,050, Cl. 260-5.000.

Magee, John S., Jr.: *See*—
Vaughan, David E. W.; Lussier, Roger J.; and Magee, John S., Jr., 4,271,043, Cl. 252-455.00R.

Mager, Albrecht: *See*—
Greiner, Joachim; and Mager, Albrecht, 4,271,441, Cl. 360-130.330.

Magnavox Company, The: *See*—
Filliman, Paul D., 4,271,409, Cl. 340-703.000.

Magnavox Government and Industrial Electronics Co.: *See*—
Goutmann, Michel M. H.; and Harper, Robert C., 4,271,502, Cl. 370-62.000.

Mahdjuri, Faramarz; Asselman, George A. A.; and de Grijs, Johan C., to U.S. Philips Corporation. Solar collector comprising an evaporation/condensation system. 4,270,520, Cl. 126-433.000.

Mahmood, Kamal A., to Anaconda Company, The. Address parity check system. 4,271,521, Cl. 371-51.000.

Mainor, Ross F., Jr. Instrument support. 4,270,721, Cl. 248-285.000.

Majewicz, Wlodzimierz I.: *See*—
Tsang, David L.; and Majewicz, Wlodzimierz I., 4,270,887, Cl. 425-47.000.

Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A. Method for preparing cross-linked vinylaromatic polymers containing nitro groups. 4,271,276, Cl. 525-340.000.

Maki, E. Roland: *See*—
Freudenstein, Ferdinand; and Maki, E. Roland, 4,270,495, Cl. 123-54.00B.

Malcolm, Roger J. Stationary rope climb exercise device. 4,270,750, Cl. 272-136.000.

Malik, Vedpal S.: *See*—
Bergy, Malcolm E.; Coats, John H.; and Malik, Vedpal S., 4,271,266, Cl. 435-73.000.

Mallinckrodt, Inc.: *See*—
Giel, Thomas H., 4,271,202, Cl. 426-96.000.

Manber, Solomon; and Klein, George. Communications network. 4,271,511, Cl. 371-8.000.

Mancy, Denise: *See*—
Belloc, Andre; Florent, Jean; Lunel, Jean; Mancy, Denise; and Palla, Jean-Claude, 4,271,067, Cl. 260-112.00R.

Mandai, Masaaki: *See*—
Shida, Masaharu; Torisawa, Akira; Ueda, Makoto; Mandai, Masaaki; Sato, Katsuhiko; and Asano, Kazuhiro, 4,271,496, Cl. 368-80.000.

Mandelli, Luigi. Device for installing tiles. 4,270,325, Cl. 52-391.000.

Mann, Gamdur S., to General Motors Corporation. Coiled fibrous metallic material and coating for diesel exhaust particulate trap. 4,270,936, Cl. 55-520.000.

Mann, Kent R.: *See*—
Gray, Harry B.; and Mann, Kent R., 4,271,033, Cl. 252-188.30R.

Mansmann, Manfred: *See*—
Endres, Robert; Drave, Heinz; Mansmann, Manfred; and Puppe, Lothar, 4,271,130, Cl. 423-118.000.

March, Frank A.; and Brown, Louis S., Jr., to Seaward International, Inc. Bottom tension fence-type water buoyant containment boom. 4,270,874, Cl. 405-63.000.

Marfurt, Hans-Rudolf; and Zurrer, August, to Ciba-Geigy Corporation. Process for purifying effluents containing proteins. 4,271,028, Cl. 210-727.000.

Maring, Oscar M.; and Schneider, Kenneth W., to Schneider Metal Manufacturing Company. Refrigerating machine including energy conserving heat exchange apparatus. 4,270,363, Cl. 62-179.000.

Marlowe, Frank J.: *See*—
Gange, Robert A.; and Marlowe, Frank J., 4,271,377, Cl. 315-366.000.

Maroth, Arthur M.; and Maroth, Sybil. Golf club swing indicator. 4,270,753, Cl. 273-186.00A.

Maroth, Sybil: *See*—
Maroth, Arthur M.; and Maroth, Sybil, 4,270,753, Cl. 273-186.00A.

Marquette Metal Products: *See*—
Lowery, Robert D., 4,270,637, Cl. 192-41.00S.

Marschner, Friedmann: *See*—
Supp, Emil; Jockel, Heinz; Cornelius, Gerhard; and Marschner, Friedmann, 4,271,086, Cl. 518-704.000.

Marschollek, Michael; Simon, Wolfgang; and Walter, Carl, to Nukem GmbH. Fluidized bed reactor for working up carbon coated particles. 4,271,126, Cl. 422-143.000.

Marsh, Edward K., to Bendix Corporation, The. Electrical connector assembly. 4,270,825, Cl. 339-47.00R.

Marshall, Joseph F. Case with a changeable external appearance. 4,270,590, Cl. 150-1.600.

Martens, John A.: *See*—
Lambert, Richard J.; and Martens, John A., 4,271,223, Cl. 428-207.000.

Martin, Danny W. Intermittent light circuit body movement actuated jewelry. 4,271,457, Cl. 362-104.000.

Martin, James C.: *See*—
Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,271,307, Cl. 548-224.000.

Martin, Johann, to U.S. Philips Corporation. Method of forming fixing heads on tension springs and tension springs manufactured by this method. 4,270,261, Cl. 29-527.200.

Martin Marietta Corporation: *See*—
Osborne, Norman A.; and Gates, Robert L., 4,270,393, Cl. 74-5.00F.

Martini, Thomas: *See*—
Uhl, Klaus; Frischkorn, Hans; and Martini, Thomas, 4,271,036, Cl. 252-301.230.
Maruizumi, Haruki: *See*—
Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, 4,271,453, Cl. 361-248.000.
Marvin Glass & Associates: *See*—
Imatt, Alex, 4,270,754, Cl. 273-273.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Deschler, Gerhard; Gebhardt, Hans; and Wittmann, Dieter, 4,270,407, Cl. 74-569.000.
Maschinenfabrik Wifag: *See*—
Gertsch, Peter; and Imhof, Robert, 4,270,452, Cl. 101-148.000.
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Oonishi, Toshiyuki; Motoyama, Takeshi; and Hatanaka, Kiyoshi, 4,270,364, Cl. 62-198.000.
Moulinex, Societe Anonyme: *See—*
Hamon, Francois H. J., 4,271,349, Cl. 219-283.000.
Muchel, Franz; and Bohning, Werner, to Carl Zeiss Stiftung. Optical system for forming an image of the retina. 4,270,842, Cl. 350-452.000.
Muhlhauser, Martin: *See—*
Bergloff, Dag; Wohlfarter, Alois; Heissenberger, Otto; Muhlhauser, Martin; and Petschauer, Franz, 4,270,254, Cl. 29-148.40D.
Mukai, Kuniaki; and Hyodo, Kouichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and system of controlling effective value of alternating current. 4,271,387, Cl. 323-241.000.
Muller, Franz, to August Lepper Maschinen- und Apparatebau GmbH. Combined drum washer and drying arrangement. 4,270,281, Cl. 34-75.000.
Muller, Peter; and Mustacchi, Henry, to Andrews Paper & Chemical Co., Inc. Transparent fibrous sheets and process for making. 4,271,227, Cl. 428-264.000.
Mulligan, Jack E. Obstetric bed. 4,270,233, Cl. 5-68.000.
Munz, Joachim; Prohaska, Hans; and Rachner, Horst, to ITT Industries, Inc. Windshield wiper motor circuit. 4,271,381, Cl. 318-282.000.
Murakami, Hajime: *See—*
Murasawa, Sadao; Murakami, Hajime; and Ichida, Hiroshi, 4,270,485, Cl. 118-648.000.
Murakoshi, Makoto; and Yoshizawa, Tamotu, to Fuji Photo Film Co., Ltd. X-Y Movement mechanism. 4,270,404, Cl. 74-479.000.
Murakoshi, Makoto; and Oosaka, Shigenori, to Fuji Photo Film Co., Ltd. Laser COM device. 4,271,415, Cl. 346-108.000.
Murasawa, Sadao; Murakami, Hajime; and Ichida, Hiroshi, to Ishihara Sangyo Kaisha Ltd. Liquid developing apparatus. 4,270,485, Cl. 118-648.000.
Murata, Bunjiro: *See—*
Ito, Katsuo; Murata, Bunjiro; and Yoshimura, Kazunori, 4,270,394, Cl. 74-10.00R.
Murata Manufacturing Co., Ltd.: *See—*
Ito, Katsuo; Murata, Bunjiro; and Yoshimura, Kazunori, 4,270,394, Cl. 74-10.00R.
Murib, Jawad H., to National Distillers and Chemical Corp. Process for the preparation of tetrahydrofuran. 4,271,080, Cl. 260-346.110.
Murib, Jawad H.; and Inskeep, John M., to National Distillers and Chemical Corp. Process for the preparation of tetrahydrofuran. 4,271,081, Cl. 260-346.110.
Murphy, Michael K. Breast shield. 4,270,538, Cl. 128-282.000.
Mustacchi, Henry: *See—*
Muller, Peter; and Mustacchi, Henry, 4,271,227, Cl. 428-264.000.
Muto, Rudolph. Endotracheal tube stabilizer. 4,270,529, Cl. 128-200.260.
Myers, Alan W.: *See—*
Cresap, Wesley L.; and Myers, Alan W., 4,270,711, Cl. 244-17.170.
Myers, David J.: *See—*
Johnson, Elwin L.; Kilby, Jack S.; Lathrop, Jay W.; McFerren, John S.; and Myers, David J., 4,270,263, Cl. 29-590.000.
Myers, Frank A.: *See—*
Gordon, Leonard J.; and Myers, Frank A., 4,270,515, Cl. 126-164.000.
N/S Car Wash Enterprises, Inc.: *See—*
Ennis, George T., 4,270,958, Cl. 134-6.000.
Naarden International N.V.: *See—*
Kleipool, Reinerus J., 4,271,082, Cl. 260-347.200.
Nadal, Christian P.: *See—*
Watine, Didier J. M. M.; and Nadal, Christian P., 4,271,330, Cl. 174-84.00R.
Nadkarni, Vikas M.: *See—*
Kane, John L.; and Nadkarni, Vikas M., 4,270,888, Cl. 425-66.000.
Nagai, Masahiro: *See—*
Hirato, Motoshiro; Kawagoe, Hazime; Abe, Kazuo; Sato, Tsuyoshi; Miyake, Yasuhiko; Nagai, Masahiro; Furuichi, Katsuhisa; and Shimojima, Kiyoshi, 4,270,373, Cl. 72-41.000.
Nagano, Masashi, to Shimano Industrial Company, Limited. Speed changing device for a bicycle. 4,270,402, Cl. 74-473.00R.
Nagaoka, Shinji: *See—*
Takazawa, Yuzuru; and Nagaoka, Shinji, 4,270,851, Cl. 354-21.000.
Nagaoka, Tadahiko: *See—*
Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, 4,271,453, Cl. 361-248.000.
Nagashima, Akira: *See—*
Aotani, Yoshimasa; Misu, Hiroshi; and Nagashima, Akira, 4,271,251, Cl. 430-195.000.
Nagata, Mitsuru; and Wakasugi, Kazuyuki, to Hodogaya Chemical Co., Ltd. Process for producing 3,3-bis-(4-dimethylaminophenyl)-6-dimethylaminophthalide. 4,271,075, Cl. 260-343.400.
Nagata, Wataru: *See—*
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,295, Cl. 544-182.000.
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,296, Cl. 544-182.000.
Naglieri, Anthony N.; and Rizkalla, Nabil, to Halcon Research and Development Corp. Novel 2-bromoethyl tellurium bromides. 4,271,090, Cl. 260-550.000.
Nakada, Kiyoshi, to Yoshida Kogyo K.K. Method and apparatus for weaving web. 4,270,580, Cl. 139-431.000.
Nakagawa, Keizo; Yamano, Katsushi; Watanabe, Takashi; Yamamoto, Kunio; and Inomata, Shigeo, to Kansai Paint Co., Ltd. Two component antifouling paint. 4,270,953, Cl. 106-16.000.
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, to Nissan Motor Company, Limited. Internal combustion engine with dual induction system. 4,270,500, Cl. 123-308.000.
Nakai, Fumio: *See—*
Sakano, Hajime; Nakai, Fumio; and Tomari, Yukio, 4,271,230, Cl. 428-315.000.
Nakai, Hiroshi: *See—*
Minohara, Kiyomi; Sugiyama, Akira; Nakai, Hiroshi; Iida, Masajiro; Morimatsu, Hideharu; and Kobayashi, Yuzo, 4,271,490, Cl. 367-122.000.
Nakai, Meroji: *See—*
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, 4,270,500, Cl. 123-308.000.
Nakajima, Kimio: *See—*
Shiraiwa, Toshio; Yamaguchi, Hisao; Matsumoto, Shigeaki; Tomabechi, Masatoshi; and Nakajima, Kimio, 4,270,389, Cl. 73-612.000.
Nakajima, Ryoji: *See—*
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, 4,270,500, Cl. 123-308.000.
Nakamura, Kenichi: *See—*
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,270,472, Cl. 112-158.00E.
Nakamura, Kotaro: *See—*
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,271,252, Cl. 430-216.000.

Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,271,253, Cl. 430-216.000.
Nakamura, Masakazu, to Sumitomo Precision Products Co. Ltd. Heat sink. 4,270,604, Cl. 165-185.000.
Nakamura, Sadayuki: *See*—
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,270,950, Cl. 75-126.00L.
Nakane, Masanori; Osumi, Yasuaki; Suzuki, Hiroshi; and Kato, Aakihiko, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Device for storage of hydrogen. 4,270,360, Cl. 62-48.000.
Nakanishi, Masakazu, to Tusdakoma Kogyo Kabushiki Kaisha. Sensor weft mechanism for fluid jet looms. 4,270,579, Cl. 139-370.200.
Nakanishi, Tatsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Ski and a process for manufacturing same. 4,270,768, Cl. 280-610.000.
Nakazaki, Takamitsu; Kita, Hisanao; and Akutsu, Yoji, to Hitachi, Ltd. Electron beam welding method and apparatus therefor. 4,271,348, Cl. 219-121.0ED.
Namba, Kenryo: *See*—
Tabuchi, Katsuhiko; Kato, Toshiaki; and Namba, Kenryo, 4,270,543, Cl. 128-639.000.
Nambu, Hirohiko: *See*—
Matsunaga, Fujihisa; and Nambu, Hirohiko, 4,271,322, Cl. 568-798.000.
Nanjo, Hirotoshi; and Tsuji, Toshikazu, to Kokusan Denki Co., Ltd. Ignition system for an internal combustion engine. 4,270,510, Cl. 123-648.000.
Nara, Terukatsu: *See*—
Yukawa, Hideaki; Osumi, Kazuoki; Nara, Terukatsu; and Takayama, Yoshihiro, 4,271,267, Cl. 435-108.000.
Narasimhan, Sundaram L.; and Larson, Jay M., to Eaton Corporation. Welded article and method of making same. 4,270,496, Cl. 123-90.510.
Narozny, Ronald S., to Thomas & Betts Corporation. Zero insertion force connector. 4,270,826, Cl. 339-75.0MP.
Nash, John E., to Syntex Inc. Abrasive dental tool. 4,270,903, Cl. 433-165.000.
Nasica, Jean R. L.: *See*—
Torterotot, Roland M.; and Nasica, Jean R. L., 4,270,965, Cl. 156-244.110.
National Distillers and Chemical Corp.: *See*—
Murib, Jawad H., 4,271,080, Cl. 260-346.110.
Murib, Jawad H.; and Inskeep, John M., 4,271,081, Cl. 260-346.110.
National Mine Service Company: *See*—
Baum, Gerald L., 4,270,803, Cl. 299-76.000.
National Research Development Corporation: *See*—
Singer, Alfred R. E.; and Evans, Russell W., 4,270,383, Cl. 73-82.000.
Navarro, Luis J.: *See*—
Dagostino, Thomas P.; and Navarro, Luis J., 4,271,486, Cl. 365-45.000.
NCR Corporation: *See*—
Craycraft, Donald G.; Lockwood, George C.; and Donaldson, Darrel D., 4,271,487, Cl. 365-189.000.
Neft, Charles H. Miter saw attachment. 4,270,588, Cl. 145-35.00R.
Negi, Virendra S.: *See*—
Peters, Arthur; and Negi, Virendra S., 4,271,484, Cl. 364-900.000.
Neiman, Michel, to Societe de Diffusion NEIMAN. Conversion ring for fillers. 4,270,667, Cl. 220-86.00R.
Nemecek, William F.: *See*—
Cheselka, Harry; Nemecek, William F.; and Stockwell, Dean A., 4,271,479, Cl. 364-900.000.
Nestler, Heinz: *See*—
Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.
Neubauer, Harry: *See*—
de Mets, Albert; and Neubauer, Harry, 4,271,105, Cl. 264-26.000.
Neumann, Klaus: *See*—
Dangeleit, Siegfried; and Neumann, Klaus, 4,270,738, Cl. 266-99.000.
Neumann, Peter: *See*—
Vamvakaris, Christos; Neumann, Peter; and Patsch, Manfred, 4,271,303, Cl. 546-155.000.
New Jersey Zinc Company, The: *See*—
Eshelman, Donald M., 4,270,955, Cl. 106-296.000.
New York Toy Corporation: *See*—
Gross, Meyer A., 4,270,239, Cl. 16-112.000.
Nicholson, Charles B., to Albany International Corp. Adjustable orifice air knife. 4,270,702, Cl. 239-455.000.
Nickson Industries, Inc.: *See*—
Evans, Ralph K.; and Florian, Roy S., 4,270,251, Cl. 24-277.000.
Niemann, Klaus; Wulf, Helmut; and Hauck, Peter, to Daimler-Benz Aktiengesellschaft. Steering mechanism with time derivation. 4,270,405, Cl. 74-499.000.
Nierlich, Jean: *See*—
Lavoisey, Yves; and Nierlich, Jean, 4,270,682, Cl. 225-1.000.
Nippon Electric Co., Ltd.: *See*—
Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, 4,271,513, Cl. 371-22.000.
Morita, Hideo, 4,271,399, Cl. 333-219.000.
Ohtsuka, Toshinori; and Toyohuku, Takashi, 4,271,465, Cl. 364-200.000.
Watanabe, Kojiro, 4,271,525, Cl. 375-14.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nakanishi, Tatsuo, 4,270,768, Cl. 280-610.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Shimotsuma, Teruo; Kunioka, Kazuo; Nishio, Hiroaki; and Okuyama, Yasuo, 4,270,980, Cl. 201-28.000.
Nippon Light Metal Company Limited: *See*—
Kainuma, Akio, 4,270,875, Cl. 405-129.000.
Nippon Paint Co., Ltd.: *See*—
Miki, Katsuo; and Abe, Kazutoshi, 4,271,214, Cl. 427-345.000.
Nippon Soken, Inc.: *See*—
Kawai, Hisasi; Ito, Toshimitsu; Sanada, Masakatsu; and Iwase, Kazuo, 4,271,469, Cl. 364-431.000.
Nippon Telegraph and Telephone Public Corporation: *See*—
Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, 4,271,513, Cl. 371-22.000.
Shimizu, Toshio; Ichinose, Susumu; and Ooba, Yuji, 4,271,416, Cl. 346-140.00R.
Uchida, Naoya; Seikai, Shigeyuki; Yoshimura, Kozo; and Yamanishi, Toru, 4,270,840, Cl. 350-96.340.
Nippondenso Co., Ltd.: *See*—
Fukuba, Akio; Morishita, Michio; Tanaka, Kenji; Nishi, Toshinobu; and Ouchi, Hideaki, 4,270,347, Cl. 60-276.000.
Nishi, Toshinobu: *See*—
Fukuba, Akio; Morishita, Michio; Tanaka, Kenji; Nishi, Toshinobu; and Ouchi, Hideaki, 4,270,347, Cl. 60-276.000.
Nishikawa, Masaji: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,270,860, Cl. 355-14.00R.
Nishimatsu, Shigeru: *See*—
Hori, Ryoichi; Kubo, Masaharu; Hashimoto, Norikazu; Nishimatsu, Shigeru; and Itoh, Kiyoo, 4,270,262, Cl. 29-571.000.
Nishimura, Hiromi; and Fukuzono, Hideki, to Matsushita Electric Works, Ltd.; and SDS-Electro GmbH. Circuit arrangements for the control of a bistable relay. 4,271,450, Cl. 361-155.000.
Nishimura, Tamotsu, to Futaba Kinzoku Kogyo Kabushiki Kaisha. Opening and closing apparatus for doors and the like. 4,270,781, Cl. 292-251.500.
Nishimura, Yutaka; and Gamano, Kazuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Engine mount for a vehicle. 4,270,625, Cl. 180-291.000.
Nishio, Hiroaki: *See*—
Shimotsuma, Teruo; Kunioka, Kazuo; Nishio, Hiroaki; and Okuyama, Yasuo, 4,270,980, Cl. 201-28.000.
Nishiyama, Hissai, to Yoshida Kogyo K. K. Harness for looms. 4,270,578, Cl. 139-92.000.
Nishiyama, Yumiko: *See*—
Saito, Tomoo; Nishiyama, Yumiko; Watanabe, Kazuo; Taki, Naoko; and Morikawa, Naotake, 4,271,035, Cl. 252-301.170.
Nishizawa, Jun-ichi: *See*—
Teshima, Toru; Nishizawa, Jun-ichi; and Kishi, Yasunori, 4,271,408, Cl. 340-702.000.
Nissan Motor Company, Limited: *See*—
Fukuhara, Hiroshige; and Fujiki, Norio, 4,271,535, Cl. 455-309.000.
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, 4,270,500, Cl. 123-308.000.
Sunohara, Yoshio; and Ohtsuka, Kunio, 4,270,636, Cl. 192-3.310.
Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, 4,271,453, Cl. 361-248.000.
Nitou, Hiroyasu: *See*—
Ikeda, Yoshihiko; and Nitou, Hiroyasu, 4,270,265, Cl. 29-840.000.
Nitta, Yoshiteru: *See*—
Hamakawa, Yoshihiro; Okamoto, Hiroaki; Nitta, Yoshiteru; and Adachi, Toshio, 4,271,328, Cl. 136-249.000.
Nitto Boseki Co. Ltd.: *See*—
Coggin, Charles H., Jr.; and Jones, John L., Jr., 4,270,942, Cl. 65-11.00W.
Nitto Electric Industrial Co., Ltd.: *See*—
Suzuki, Hideto; Hayashi, Shunichi; and Yoshioka, Takahiro, 4,271,061, Cl. 260-37.0EP.
Niwa, Shuichi: *See*—
Ishikawa, Toshio; Niwa, Shuichi; Yamadaya, Shoko; and Orito, Yoshio, 4,271,327, Cl. 585-440.000.
Nixdorf Computer AG: *See*—
Haftmann, Johannes, 4,270,867, Cl. 400-207.000.
NL Industries, Inc.: *See*—
Herman, Daniel F.; and Kruse, Uno, 4,270,977, Cl. 162-168.00R.
Noe, Oskar, to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH. Walking-beam conveyer. 4,270,655, Cl. 198-774.000.
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, to A/S Akers Mek. Versted. Device for sealing the place of penetration of a pipeline in the wall of a submerged structure. 4,270,775, Cl. 285-24.000.
Nonnenmann, Manfred; and Hummel, Werner, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Fluid-filled friction clutch. 4,270,641, Cl. 192-82.00T.
Norcross, Paul D., to Thexton Manufacturing Company. Self-adjusting automotive clutch link. 4,270,646, Cl. 192-111.00A.
Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See*—
Krohn, Manfred, 4,270,650, Cl. 198-388.000.
Norman, Arthur E., to Torr Vacuum Products, Inc. Spring loaded plug valve. 4,270,727, Cl. 251-63.400.
Norman, Harry H., to Eleven States Mfg. Corp. Spring nesting apparatus. 4,270,582, Cl. 140-71.00R.
North American Industries, Inc.: *See*—
Forsyth, Robert J., 4,270,482, Cl. 116-209.000.
North American Philips Corporation: *See*—
Rakocy, William J., 4,271,338, Cl. 200-61.710.

North American Utility Construction Corp.: *See*—
Stark, Virgil, 4,270,981, Cl. 202-172.000.
Northern Telecom, Inc.: *See*—
Adams, William J.; and Wernet, William F., 4,271,333, Cl. 179-90.00K.
Northern Telecom Limited: *See*—
Howat, Robert J., 4,270,963, Cl. 156-201.000.
Norton, David J.; and Brown, Christopher R., to Westinghouse Brake & Signal Co. Railway control signal interlocking systems. 4,270,715, Cl. 246-5.000.
Nose, Takahiko: *See*—
Furuichi, Shuhei; and Nose, Takahiko, 4,271,371, Cl. 310-316.000.
Nota, Peter: *See*—
Gildea, Dennis M.; and Nota, Peter, 4,270,679, Cl. 224-181.000.
Nother, Gernot, to Kernforschungszentrum Karlsruhe. Quench detector. 4,271,443, Cl. 361-19.000.
Nouvel, Jacques: *See*—
Choulet, Jean-Claude; and Nouvel, Jacques, 4,271,316, Cl. 562-480.000.
Nova Scotia Research Foundation Corporation: *See*—
Michaud, Louis M., 4,271,120, Cl. 422-53.000.
Novak, Richard E.: *See*—
Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., 4,271,129, Cl. 422-246.000.
NTN Toyo Bearing Co. Ltd.: *See*—
Kimata, Kei; and Fukunaga, Shoichi, 4,270,257, Cl. 29-157.10R.
Nukem GmbH: *See*—
Marschollek, Michael; Simon, Wolfgang; and Walter, Carl, 4,271,126, Cl. 422-143.000.
O. F. Mossberg & Sons, Inc.: *See*—
Grehl, William H., 4,270,295, Cl. 42-70.00F.
Obata, Eisuke: *See*—
Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, 4,270,541, Cl. 128-344.000.
Oberlander, Michael: *See*—
Winicov, Murray W.; and Oberlander, Michael, 4,271,149, Cl. 424-150.000.
Oberth, Hans G.; and Aminger, Gerhard A., to Caterpillar Tractor Co. Fluid sequence bypass apparatus. 4,270,562, Cl. 137-115.000.
Obokata, Tsuneo: *See*—
Shimatani, Shirou; Orita, Ryohji; and Obokata, Tsuneo, 4,270,484, Cl. 118-305.000.
O'Brien, Gerald E., to Computer Microfilm International Corporation. Microfilm display apparatus. 4,271,430, Cl. 358-102.000.
O'Brien, Jerome J.: *See*—
Baker, Judd O.; O'Brien, Jerome J.; Curtis, Westley F.; and Varney, Frederick M., 4,270,479, Cl. 114-240.00A.
Occella, Sergio; Arietti, Giulio; and Borello, Giampiero, to Centro Ricerche Fiat S.p.A. Internal combustion engine. 4,270,498, Cl. 123-276.000.
Occidental Research Corporation: *See*—
Frischmuth, Robert W., 4,270,928, Cl. 44-1.0SR.
Stover, Carole S.; Compton, Leslie E.; and Youngerman, Eugene G., 4,271,009, Cl. 208-254.00R.
Oellerer, Friedrich: *See*—
Theurer, Josef; and Oellerer, Friedrich, 4,270,456, Cl. 104-3.000.
Offshore Devices, Inc.: *See*—
Milgram, Jerome H., 4,271,017, Cl. 210-95.000.
Oftelie, Phil C. Radio operated latch dead-bolting system. 4,270,370, Cl. 70-118.000.
Ogawa, Kazufumi: *See*—
Chikamura, Takao; Ogawa, Kazufumi; Terui, Yasuaki; Fujiwara, Shinji; and Fukai, Masakazu, 4,271,420, Cl. 357-30.000.
Ohara, Minoru: *See*—
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,271,151, Cl. 424-177.000.
Ohara, Naoki: *See*—
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,270,472, Cl. 112-158.00E.
Ohlinger, Manfred: *See*—
Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.
Ohloff, Gunther: *See*—
Becker, Joseph J.; and Ohloff, Gunther, 4,271,076, Cl. 260-343.210.
Ohmori, Taiji; and Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Device for diagnosing trouble in a control circuit for electromagnetic actuators. 4,270,809, Cl. 303-92.000.
Ohno, John M., to General Electric Company. Method of compacting dry powder into shapes. 4,271,114, Cl. 264-114.000.
Ohtsuka, Kunio: *See*—
Sunohara, Yoshio; and Ohtsuka, Kunio, 4,270,636, Cl. 192-3.310.
Ohtsuka, Toshinori; and Toyohuku, Takashi, to Nippon Electric Co., Ltd. Information handling unit provided with a self-control type bus utilization unit. 4,271,465, Cl. 364-200.000.
Ohtsuki, Nobuo; Yamada, Eiji; and Utaka, Tadashi, to Rigaku Industrial Corporation. X-ray spectroscope. 4,271,353, Cl. 250-276.000.
Ohuchi, Kenji: *See*—
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,271,208, Cl. 427-28.000.
Oikawa, Hiroshi: *See*—
Maeda, Hiroshi; Ariga, Nagao; Oikawa, Hiroshi; and Tominaga, Hidemitsu, 4,271,079, Cl. 260-346.300.
Okamoto, Hiroaki: *See*—
Hamakawa, Yoshihiro; Okamoto, Hiroaki; Nitta, Yoshiteru; and Adachi, Toshio, 4,271,328, Cl. 136-249.000.
Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, to Fuji Latex Co., Ltd. Instrument for induction of labor. 4,270,541, Cl. 128-344.000.
Oki Electric Industry Co., Ltd.: *See*—
Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, 4,271,513, Cl. 371-22.000.
Okonite Company, The: *See*—
Faranetta, John G.; and Feller, Robert G., 4,270,961, Cl. 156-51.000.
Okuno, Yoshitoshi: *See*—
Yamaguchi, Takashi; Shinjo, Goro; and Okuno, Yoshitoshi, 4,271,180, Cl. 424-274.000.
Okura, Keniti, to Pioneer Electronic Corporation. Pickup cartridge having a resilient biasing member for holding an elongated stylus holder against a support surface thereof. 4,271,335, Cl. 369-136.000.
Okuyama, Yasuo: *See*—
Shimotsuma, Teruo; Kunioka, Kazuo; Nishio, Hiroaki; and Okuyama, Yasuo, 4,270,980, Cl. 201-28.000.
Oleck, Stephen M.; Sherry, Howard S.; Fischer, Ronald H.; and Milstein, Donald, to Mobil Oil Corporation. Process for demetalation and desulfurization of petroleum oils. 4,271,042, Cl. 252-439.000.
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Roller bearing. 4,270,815, Cl. 308-213.000.
Olson, Donald N.: *See*—
Plumer, Roy D.; and Olson, Donald N., 4,270,293, Cl. 42-1.00F.
Olympus Optical Co., Ltd.: *See*—
Furihata, Hiroyuki, 4,270,525, Cl. 128-4.000.
Furusawa, Mitsuru; Yamamoto, Fumiichiro; and Yoshinaga, Makoto, 4,270,838, Cl. 350-81.000.
Goto, Atsuo, 4,270,843, Cl. 350-480.000.
Kawazoe, Mitsuo, 4,271,376, Cl. 315-241.00P.
Motoyama, Kazuyasu, 4,270,685, Cl. 226-194.000.
Takahashi, Naoyuki; and Kadota, Toshihiko, 4,270,723, Cl. 248-421.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,270,860, Cl. 355-14.00R.
Ono, Nobutaka, to Osaka Bobbin Kabushiki Kaisha. Resiliently compressible bobbin. 4,270,710, Cl. 242-118.110.
Ono Pharmaceutical Co., Ltd.,: *See*—
Tanouchi, Tadao; Kawamura, Masanori; and Hayashi, Masaki, 4,271,170, Cl. 424-263.000.
Onoda Cement Co., Ltd.: *See*—
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,271,208, Cl. 427-28.000.
Onodera, Toshio: *See*—
Tanimura, Ken; and Onodera, Toshio, 4,271,463, Cl. 363-126.000.
Ooba, Yuji: *See*—
Shimizu, Toshio; Ichinose, Susumu; and Ooba, Yuji, 4,271,416, Cl. 346-140.00R.
Ooho, Morihei. Cold display case. 4,270,819, Cl. 312-116.000.
Oonishi, Toshiyuki; Motoyama, Takeshi; and Hatanaka, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Freezing refrigerator. 4,270,364, Cl. 62-198.000.
Oosaka, Shigenori: *See*—
Murakoshi, Makoto; and Oosaka, Shigenori, 4,271,415, Cl. 346-108.000.
Op den Camp, Lutz E. A.: *See*—
Thomas, Alfred W.; and Op den Camp, Lutz E. A., 4,270,438, Cl. 91-49.000.
Opalka, Chester J., Jr.: *See*—
Lesher, George Y.; and Opalka, Chester J., Jr., 4,271,168, Cl. 424-263.000.
Oppenlaender, Knut; Strickler, Rainer; Perner, Johannes; and Trieselt, Wolfgang. Color stabilized nonionic surfactants and alkaline cleanser formulations containing these surfactants. 4,271,031, Cl. 252-156.000.
Orion-yhtyma Oy: *See*—
Honkanen, Erkki J.; Pippuri, Aino K.; Kairisalo, Pekka J.; Thaler, Heinrich; Koivisto, Maija K.; and Tuomi, Sirpa A., 4,271,300, Cl. 544-291.000.
Orita, Ryohji: *See*—
Shimatani, Shirou; Orita, Ryohji; and Obokata, Tsuneo, 4,270,484, Cl. 118-305.000.
Orito, Yoshio: *See*—
Ishikawa, Toshio; Niwa, Shuichi; Yamadaya, Shoko; and Orito, Yoshio, 4,271,327, Cl. 585-440.000.
O'Rourke, J. Cam; Pilkington, G. Roger; and Bercha, Frank G., to Dome Petroleum Limited. Barge construction for warm air canopy ice-free zone. 4,270,476, Cl. 114-40.000.
Orscheln Co.: *See*—
Lipshield, Eugene C.; and Boyer, Billy G., 4,270,406, Cl. 74-516.000.
Ortmann & Herbst GmbH: *See*—
Mette, Manfred, 4,270,585, Cl. 141-37.000.
Orzelek, Frank J.: *See*—
Ragard, Phillip A.; and Orzelek, Frank J., 4,270,651, Cl. 198-456.000.
Osaka Bobbin Kabushiki Kaisha: *See*—
Ono, Nobutaka, 4,270,710, Cl. 242-118.110.
Osborne, Norman A.; and Gates, Robert L., to Martin Marietta Corporation. Isolation system. 4,270,393, Cl. 74-5.00F.
Osumi, Kazuoki: *See*—
Yukawa, Hideaki; Osumi, Kazuoki; Nara, Terukatsu; and Takayama, Yoshihiro, 4,271,267, Cl. 435-108.000.

Osumi, Yasuaki: *See—*
Nakane, Masanori; Osumi, Yasuaki; Suzuki, Hiroshi; and Kato, Aakihiko, 4,270,360, Cl. 62-48.000.

Ottl, Hartmut, to Dorst-Keramikmaschinen-Bau. Apparatus for controlling the height of pressed workpieces of ceramic powder or other material in a press. 4,270,890, Cl. 425-150.000.

Otto, Michael J.; and Ray, George C., to General Foods Corporation. Laminated structure incorporating expandable pockets. 4,271,220, Cl. 428-134.000.

Ouchi, Hideaki: *See—*
Fukuba, Akio; Morishita, Michio; Tanaka, Kenji; Nishi, Toshinobu; and Ouchi, Hideaki, 4,270,347, Cl. 60-276.000.

Outram, Stephen H.; and Luckhurst, Geoffrey A., to Solartron Electronic Group Limited, The. Latching relay circuits and analog to digital converters. 4,271,392, Cl. 324-115.000.

Overbeek, Robert B.: *See—*
Glaze, Jack G.; and Overbeek, Robert B., 4,270,409, Cl. 74-665.0GA.

Overholt, Ronald. Bag holding device. 4,270,788, Cl. 294-55.000.

Overy, Michael R.: *See—*
Vance, Ian A. W.; and Overy, Michael R., 4,271,501, Cl. 370-24.000.

Owens-Corning Fiberglas Corporation: *See—*
Babbitt, William M., 4,270,941, Cl. 65-1.000.
Eastes, Walter L.; and Tarantino, Anna, 4,270,944, Cl. 65-27.000.
Kane, John L.; and Nadkarni, Vikas M., 4,270,888, Cl. 425-66.000.
Riddell, John M.; and Schultz, William W., 4,270,943, Cl. 65-15.000.

Owens-Illinois, Inc.: *See—*
Stengle, Edward J., 4,271,212, Cl. 427-203.000.
Trogdon, Raymond L., 4,270,863, Cl. 356-71.000.

Owens, Lloyd J., to Robbins Company, The. Earth boring apparatus. 4,270,618, Cl. 175-57.000.

Oy Tampella Ab: *See—*
Haikkala, Pekka O., 4,270,703, Cl. 241-18.000.

Ozawa, Takashi: *See—*
Takenouchi, Mutsuo; Tomiyama, Shunsuke; and Ozawa, Takashi, 4,271,435, Cl. 358-213.000.

Page, Norman B.; and Bursott, Leslie W., to General Motors Corporation. Fastener means for interior trim panel. 4,270,328, Cl. 52-511.000.

Paivanas, John A.: *See—*
Hassan, Javathu K.; and Paivanas, John A., 4,270,999, Cl. 204-192.00E.

Pakhomova, Eleonora M.: *See—*
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.

Pako Corporation: *See—*
Beckman, Gregg S., 4,270,861, Cl. 355-38.000.

Palla, Jean-Claude: *See—*
Belloc, Andre; Florent, Jean; Lunel, Jean; Mancy, Denise; and Palla, Jean-Claude, 4,271,067, Cl. 260-112.00R.

Palmer, Dennis L.: *See—*
Meny, Allan H.; and Palmer, Dennis L., 4,270,933, Cl. 55-279.000.

Palmer, Wilbur C.; and Rusby, Frank L., to Corning Glass Works. Induction heating coil. 4,271,345, Cl. 219-10.790.

Palomar, Chester J. Escape hatch for dwellings. 4,270,311, Cl. 49-141.000.

Pan, Robert F.: *See—*
Morgan, David B.; Pan, Robert F.; Quinn, Paul A., Jr.; and Westerman, Glenn S., 4,270,868, Cl. 400-320.000.

Panafacom Limited: *See—*
Yamamoto, Mitsuru; Arai, Jun; Isogawa, Takao; and Hasebe, Isamu, 4,271,466, Cl. 364-200.000.

Pappo, Raphael: *See—*
Collins, Paul W.; and Pappo, Raphael, 4,271,314, Cl. 560-121.000.

Paradyne Corporation: *See—*
Armstrong, Thomas R., 4,271,527, Cl. 375-39.000.

Parras, Karlheinz; Bader, Edgar; and Dupont, Helmut, to Te Ka De, Felten & Guilleaume, Fernmeldeanlagen GmbH. Loopback test for data transmission paths. 4,271,514, Cl. 371-22.000.

Parsons, John S.: *See—*
Brierley, John M.; Parsons, John S.; Trueman, James R.; and Jones, Robert A., 4,271,030, Cl. 252-98.000.

Parsteel Products & Services Company, Inc.: *See—*
Rosenband, Phillip, 4,270,661, Cl. 211-49.00D.

Pasqualini, Guido. Platen positioning attachment for typewriters for typewriting musical notation. 4,270,866, Cl. 400-117.000.

Passarotti, Carlo: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,271,183, Cl. 424-285.000.
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,271,184, Cl. 424-285.000.

Pastorino, Ronald L.; Lewis, Roger N.; and Abma, Charles B., to Argus Chemical Corporation. Cyclic perketals and their use for cross-linking high density polyethylene. 4,271,279, Cl. 525-387.000.

Pate, Paul E.: *See—*
Hooke, John W.; and Pate, Paul E., 4,271,241, Cl. 429-54.000.

Patecell, Theodore C. Unitary run-flat systems for inflatable tires and lock means. 4,270,592, Cl. 152-158.000.

Patel, Raman: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,271,049, Cl. 260-4.00R.

Patenaude, Raymond A.: *See—*
Bishop, James C.; and Patenaude, Raymond A., 4,270,436, Cl. 89-33.00R.

Patsch, Manfred: *See—*
Vamvakaris, Christos; Neumann, Peter; and Patsch, Manfred, 4,271,303, Cl. 546-155.000.

Patterson, David L.: *See—*
Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., 4,271,129, Cl. 422-246.000.

Pauliukonis, Richard S. High pressure letdown valve. 4,270,571, Cl. 137-614.110.

Pearson, Walter C., to Minnesota Mining and Manufacturing Company. Applicator for a double coated tape strip. 4,270,971, Cl. 156-510.000.

Pedder, Christopher T.: *See—*
Jenkins, John M.; Pedder, Christopher T.; and Robertson, Neil G. D., 4,270,552, Cl. 131-290.000.

Peloza, Kirk, to Eaton Corporation. Block mounted automotive heater control valve. 4,270,728, Cl. 251-143.000.

Pelter, Andrew; and Ryder, David J., to Imperial Chemical Industries Limited. Alkylborane complexes. 4,271,317, Cl. 564-8.000.

Pengo, Giuseppe; and Schwerdhofer, Hans J., to Fichtel & Sachs AG; and S.O.L.E. Societa Opitergina Lavorazioni Elettroplastiche S.p.A. Washing machine drive assembly. 4,270,411, Cl. 74-752.00E.

Perception Electronics, Inc.: *See—*
McComas, Ralph J., 4,271,455, Cl. 361-331.000.

Perelmuter, Michel, to Compagnie Francaise des Isolants. Fusible textile device adapted to be placed between a thermo-retractible element and electrical conductors or components to provide a fluid tight coupling. 4,271,329, Cl. 174-84.00R.

Perfect-Line Manufacturing Corp.: *See—*
Brenner, Stanley, 4,270,830, Cl. 339-99.00R.

Perilhou, Jean R.; and Coursant, Roger H., to U.S. Philips Corporation. Device for ultrasonic examination of biological structures. 4,270,546, Cl. 128-660.000.

Perner, Johannes: *See—*
Oppenlaender, Knut; Strickler, Rainer; Perner, Johannes; and Trieselt, Wolfgang, 4,271,031, Cl. 252-156.000.

Perovetz, Lawrence M.; and Stern, Harold J., to H.L.P. Imports Ltd. Polishing of silver-plated articles. 4,270,932, Cl. 51-293.000.

Perretta, Frank. Zone controlled dampening means. 4,270,451, Cl. 101-148.000.

Pesa, Frederick A.; and Haase, Thomas A., to Standard Oil Company. Catalysts for the hydroformylation of olefinically unsaturated compounds. 4,271,038, Cl. 252-428.000.

Peters, Arnis E., to Realist, Inc. Microimage storage and retrieval apparatus. 4,270,850, Cl. 353-27.00R.

Peters, Arthur; and Negi, Virendra S., to Honeywell Information Systems Inc. Condition code accumulator apparatus for a data processing system. 4,271,484, Cl. 364-900.000.

Peters, Bernd W.: *See—*
Wuest, Willi; Just, Guenther; and Peters, Bernd W., 4,271,135, Cl. 423-329.000.

Peters, John R.; and Armstrong, Warren G., to Armstrong Industries, Inc. Inflatable trouser for medical use. 4,270,527, Cl. 128-87.00R.

Peters, Philip H., to Electric Power Research Institute. Power converter and regulation apparatus. 4,271,462, Cl. 363-84.000.

Petschauer, Franz: *See—*
Bergloff, Dag; Wohlfarter, Alois; Heissenberger, Otto; Muhlhauser, Martin; and Petschauer, Franz, 4,270,254, Cl. 29-148.40D.

Pettersen, Paal: *See—*
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, 4,270,775, Cl. 285-24.000.

Peyla, Richard J.: *See—*
Campbell, Curtis B.; and Peyla, Richard J., 4,270,930, Cl. 44-71.000.

PFP-Anstalt fur Produktentwicklung und Verwertung: *See—*
Schramm, Werner, 4,270,461, Cl. 108-31.000.

Phillips, Gary M.; and Untereker, Darrel F., to Medtronic, Inc. Cathode materials. 4,271,278, Cl. 525-356.000.

Phillips Petroleum Company: *See—*
Hubby, John S., 4,271,060, Cl. 260-33.60A.

Phipps, Arthur L., to Condec Corporation. Foam extrusion apparatus and method. 4,271,107, Cl. 264-51.000.

Pichler, Ludwig: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Arndts, Dietrich; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,271,175, Cl. 424-273.00R.

Pierburg Luftfahrtgerate Union GmbH: *See—*
Henning, Hans J.; and Holzem, Heinz, 4,271,098, Cl. 261-66.000.

Pierre Fabre S.A.: *See—*
Mazoyer, France, 4,271,191, Cl. 424-317.000.

Pileco, Inc.: *See—*
Sahajdak, Steven L., 4,271,475, Cl. 364-506.000.

Pilkington, G. Roger: *See—*
O'Rourke, J. Cam; Pilkington, G. Roger; and Bercha, Frank G., 4,270,476, Cl. 114-40.000.

Pilz, Otto: *See—*
Abele, Werner; Grossa, Mario; and Pilz, Otto, 4,271,260, Cl. 430-292.000.

Pinto, Luiz A. C. D. R., to Santal Equipamentos S.A. Comercio E. Industria. Harvester of sugar cane or similar products. 4,270,337, Cl. 56-13.900.

Pioneer Electronic Corporation: *See—*
Higashi, Ryozi; and Hirano, Hiroyuki, 4,271,398, Cl. 333-28.00T.
Okura, Keniti, 4,271,335, Cl. 369-136.000.

Pippuri, Aino K.: *See—*
Honkanen, Erkki J.; Pippuri, Aino K.; Kairisalo, Pekka J.; Thaler, Heinrich; Koivisto, Maija K.; and Tuomi, Sirpa A., 4,271,300, Cl. 544-291.000.

Pitney Bowes Inc.: *See—*
Check, Frank T., Jr.; Eckert, Alton B., Jr.; and Warren, Joseph R., 4,271,481, Cl. 364-900.000.
Dlugos, Daniel F.; and Harenberg, Donald D., 4,271,470, Cl. 364-466.000.

Pitt, Harold M., to Stauffer Chemical Company. Process for the manufacture of 1,1-dihalo-4-methyl-1,3-pentadienes. 4,271,325, Cl. 570-228.000.

Pittasch, Willi: *See—*
Zernig, Ernst; and Pittasch, Willi, 4,270,240, Cl. 16-148.000.

Plainer, Hermann: *See—*
Trabitzsch, Hans; Frieser, Josef; Koschik, Achim; and Plainer, Hermann, 4,271,058, Cl. 260-29.60M.

Plimley, Raymond E.: *See—*
Goodridge, Francis; and Plimley, Raymond E., 4,270,995, Cl. 204-79.000.

Plischke, LeMoyne W.; and Baggett, William M., to Monsanto Company. Crimped polyamide filament. 4,271,233, Cl. 428-370.000.

Plumer, Roy D.; and Olson, Donald N., to United States of America, Army. Device for launching non-lethal ring airfoil projectiles. 4,270,293, Cl. 42-1.00F.

Plumley, Peter F. Gastro-intestinal tubes. 4,270,542, Cl. 128-350.00R.

Pogorelova, Iraida S.: *See—*
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Pogorelova, Iraida S.; Pritsker, Petr Y.; Kandrusev, Igor I.; and Liberfarb, Zilek B., 4,270,349, Cl. 60-384.000.

Pointer, Odell, Jr. Drip irrigator for hanging baskets. 4,270,696, Cl. 239-38.000.

Polad, Michael D.: *See—*
LaManna, Richard J.; Drillick, Jacob H.; and Polad, Michael D., 4,271,012, Cl. 209-653.000.

Polaroid Corporation: *See—*
Baker, James G., 4,270,837, Cl. 350-54.000.
Douglas, Lawrence M., 4,270,855, Cl. 354-124.000.
Kamman, Daniel T., 4,270,382, Cl. 73-37.500
Wray, William R., 4,271,439, Cl. 360-65.000.

Poler, Stanley, to Lynell Medical Technology Inc. Intraocular lens. 4,270,230, Cl. 3-13.000.

Polikarpova, Antonin P.: *See—*
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.

Polinski, Leon M.; Roberts, George W.; and Hindin, Saul G., to Engelhard Minerals & Chemicals Corporation. Catalyst system. 4,270,896, Cl. 431-328.000.

Pollution Control Products Co.: *See—*
Kelly, Stephen B., 4,270,898, Cl. 432-19.000.

Polysar Limited: *See—*
Blackshaw, George C., 4,271,052, Cl. 260-23.70N.

Polzl, Hans-Werner: *See—*
Will, Heinz-Dieter; Dommes, Werner; and Polzl, Hans-Werner, 4,270,356, Cl. 60-602.000.

Pomerantz, Allen J., to General Motors Corporation. Closed loop air/fuel ratio control system. 4,270,503, Cl. 123-438.000.

Ponchaux, Jean-Luc. Fluid rotary machine. 4,270,439, Cl. 91-495.000.

Pond, Robert J., to Acme Cleveland Corporation. Electronic protection circuit for solid state switches energizing AC loads. 4,271,448, Cl. 361-93.000.

Ponsinet, Gerard: *See—*
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,271,156, Cl. 424-246.000.
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,271,167, Cl. 424-263.000.

Popov, Alexandr D.; Solomin, Vladimir A.; Khantimirov, Sergei S.; and Shirokov, Alexandr A. Linear induction motor. 4,271,367, Cl. 310-13.000.

Population Council, Inc.: *See—*
Tsong, Yun-Yen; Talwar, Gursaran P.; Koide, Samuel; and Segal, Sheldon J., 4,271,069, Cl. 260-112.50R.

Porter, Roy: *See—*
Heald, Terence E.; and Porter, Roy, 4,270,917, Cl. 8-527.000.

Post, Adrianus J., to Steven Baggeren V.V. Working platform. 4,270,877, Cl. 405-198.000.

Potgieter, Maurice S. Battery cable connector. 4,270,827, Cl. 339-95.00B.

Potomac Applied Mechanics, Inc.: *See—*
Stubbings, James H., 4,270,445, Cl. 100-4.000.

Potter, Robert I.: *See—*
Heiman, Neil D.; White, Robert L.; Potter, Robert I.; and Albert, Paul A., 4,271,232, Cl. 428-332.000.

Pottgiesser, Hermann: *See—*
Hansen, Guenter; Pottgiesser, Hermann; and Schlindwein, Walter, 4,271,231, Cl. 428-323.000.

Power Engineering and Manufacturing, Ltd.: *See—*
Herscovici, Saul, 4,270,410, Cl. 74-665.00Q.

PPG Industries, Inc.: *See—*
Amrhein, Alan G.; Hammel, Joseph J.; and Shelestak, Larry J., 4,270,945, Cl. 65-99.00A.
Cunningham, Hugh; and Raetzsch, Carl W., 4,271,004, Cl. 204-266.000.
Kacirek, Kenneth J., 4,270,879, Cl. 414-35.000.
Temple, Chester S., 4,271,229, Cl. 428-288.000.

Prabhu, Vasant K.: *See—*
Goodman, David J.; Henry, Paul S.; and Prabhu, Vasant K., 4,271,524, Cl. 375-1.000.

Prentiss, William C., to Seton Company. Stabilized tanning composition comprising a reaction product of (a) polyaldehyde (b) secondary amine and (c) an alcohol and method. 4,270,912, Cl. 8-94.260.

Prestele, Karl: *See—*
Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, 4,270,532, Cl. 128-213.00R.

Preston, William B. Reclining chair with leg rest operating mechanism. 4,270,796, Cl. 297-69.000.

Prince Albert Pulpwood Ltd.: *See—*
Hyde, Bruce; and Tyndall, Wayne, 4,270,586, Cl. 144-309.0AC.

Pritchett, William C., to Atlantic Richfield Company. Coupling means for horizontal vibrator. 4,270,626, Cl. 181-113.000.

Pritsker, Petr Y.: *See—*
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Pogorelova, Iraida S.; Pritsker, Petr Y.; Kandrusev, Igor I.; and Liberfarb, Zilek B., 4,270,349, Cl. 60-384.000.

Prohaska, Hans: *See—*
Munz, Joachim; Prohaska, Hans; and Rachner, Horst, 4,271,381, Cl. 318-282.000.

Protoned B.V.: *See—*
Brauning, Egon, 4,270,797, Cl. 297-300.000.

Puglia, Wayne J.; Witzel, Frank; and Mackay, Donald A. M., to Life Savers, Inc. Portable liquid antacids. 4,271,142, Cl. 424-14.000.

Puhk, Heino, to SCM Corporation. Suspension polymerization process for producing large polymer particles. 4,271,283, Cl. 526-317.000.

Punte, Mildred C. Multi-stage hair curler. 4,270,555, Cl. 132-40.000.

Puppe, Lothar: *See—*
Endres, Robert; Drave, Heinz; Mansmann, Manfred; and Puppe, Lothar, 4,271,130, Cl. 423-118.000.

Purdue Research Foundation: *See—*
Dixon, Jack B.; and Hall, Randall C., 4,271,022, Cl. 210-198.200.

Putt, Arthur G. Taco holders. 4,270,660, Cl. 211-13.000.

Pye (Electronic Products) Limited: *See—*
Bradshaw, Robert F. D.; and Kraicer, Alec, 4,271,357, Cl. 250-287.000.

Quaker Oats Company, The: *See—*
Hempenius, Walter L.; and Yantis, June E., 4,271,200, Cl. 426-27.000.

Quay, Earl R.; and Jauch, Gerhard, to Mayer, Rothkopf Industries, Inc. Device for detecting broken heads of knitting machine needles. 4,270,369, Cl. 66-157.000.

Quinn, Paul A., Jr.: *See—*
Morgan, David B.; Pan, Robert F.; Quinn, Paul A., Jr.; and Westerman, Glenn S., 4,270,868, Cl. 400-320.000.

R. Berchtold AG: *See—*
Vonlanthen, Benno; and Walther, Robert, 4,270,372, Cl. 70-406.000.

R. J. Reynolds Tobacco Company: *See—*
Conrad, Lucas J.; and White, Jackie L., 4,270,553, Cl. 131-291.000.

Racal Automation Limited: *See—*
Smith, Anthony J., 4,271,516, Cl. 371-25.000.

Racciato, Joseph S., to Merck & Co., Inc. Dyeing composition and method. 4,270,916, Cl. 8-527.000.

Rachner, Horst: *See—*
Munz, Joachim; Prohaska, Hans; and Rachner, Horst, 4,271,381, Cl. 318-282.000.

Rachor, Lothar: *See—*
Hrovat, Milan; Huschka, Hans; and Rachor, Lothar, 4,271,102, Cl. 264-0.500.

Rachuk, Ronald: *See—*
Reay, Robert G.; and Rachuk, Ronald, 4,270,569, Cl. 137-514.700.

Radian Corporation: *See—*
Braga, Alphonse M., 4,270,241, Cl. 17-1.00C.

Raetzsch, Carl W.: *See—*
Cunningham, Hugh; and Raetzsch, Carl W., 4,271,004, Cl. 204-266.000.

Ragard, Phillip A.; and Orzelek, Frank J., to Universal Instruments Corporation. Taped belt electronic component centering device. 4,270,651, Cl. 198-456.000.

Ragoza, Igor V.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Dina N.; and Tonikian, Robert T. Method and circular warp knitting machine for knitting stockings. 4,270,368, Cl. 66-13.000.

Rainer Isolierrohrfabrik Max Drossbach: *See—*
Fales, David E., 4,270,878, Cl. 409-143.000.

Rakocy, William J., to North American Philips Corporation. Security apparatus. 4,271,338, Cl. 200-61.710.

Ralston, Ronald R., to Borg-Warner Corporation. Charge forming apparatus. 4,270,507, Cl. 123-523.000.

Raphael, Rouchdy B. Rotatable cutting guide. 4,270,426, Cl. 83-411.00R.

Rapid Mounting & Finishing Company: *See—*
Babberl, Marion G., 4,270,291, Cl. 40-594.000.

Rapidgate, Inc.: *See—*
Laehy, Peter; and Dag, Stefan A., 4,270,873, Cl. 404-10.000.

Rasmussen, Donald E.: *See—*
Eklund, James D.; Halter, Joseph M.; Rasmussen, Donald E.; Sullivan, Robert G.; and Moffat, Robert B., 4,270,876, Cl. 405-133.000.

Raue, Roderich: *See—*
Brinkmann, Uwe; Telle, Helmut; and Raue, Roderich, 4,271,395, Cl. 331-94.50L.

Ray, George C.: *See*—
Otto, Michael J.; and Ray, George C., 4,271,220, Cl. 428-134.000.
Ray, Sunnie, to Game Time, Inc. Modularized slide. 4,270,748, Cl. 272-56.50R.
Raychem Pontoise S.A.: *See*—
Watine, Didier J. M. M.; and Nadal, Christian P., 4,271,330, Cl. 174-84.00R.
Raytheon Company: *See*—
Glass, Jeremy M.; Lampke, George G.; and St. Germain, Roger L., 4,271,412, Cl. 343-5.0FT.
RCA Corporation: *See*—
Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., 4,271,129, Cl. 422-246.000.
Gange, Robert A.; and Marlowe, Frank J., 4,271,377, Cl. 315-366.000.
Ipri, Alfred C., 4,271,422, Cl. 357-42.000.
Leidich, Arthur J., 4,271,394, Cl. 330-258.000.
Morrell, Albert M., 4,271,247, Cl. 430-24.000.
Siryj, Bohdan W.; and Gilson, Alan P., 4,271,489, Cl. 369-38.000.
Theriault, Gerald E., 4,271,433, Cl. 358-191.100.
Wine, Charles M., 4,271,532, Cl. 455-186.000.
Realist, Inc.: *See*—
Peters, Arnis E., 4,270,850, Cl. 353-27.00R.
Reay, Robert G.; and Rachuk, Ronald, to Christensen Inc. Valve assembly for the remote control of fluid flow having an automatic time delay. 4,270,569, Cl. 137-514.700.
Red Lodge Manufacturing Company: *See*—
Courtis, Thomas M.; and Donelson, Carl E., 4,270,312, Cl. 49-385.000.
Redland Roof Tiles Limited: *See*—
Townsend, Roger, 4,270,330, Cl. 52-712.000.
Redman, James C. Fluid control valve. 4,270,732, Cl. 251-310.000.
Redmer, Frank: *See*—
Hoffmann, Erwin; Krippl, Kurt; Kraft, Karl J.; Gabrysch, Gerd; and Redmer, Frank, 4,270,889, Cl. 425-115.000.
Reed, Frank A., deceased; and Diemert, Paul M., executor, to Diemert, Paul M. Spool valve assembly. 4,270,575, Cl. 137-625.690.
Reffelmann, Gerd, to Bayer Aktiengesellschaft. Method and apparatus for the discontinuous production of a foamed block. 4,271,108, Cl. 264-51.000.
Reh, Kuno: *See*—
Bender, Heinz; Beyerle, Rudi; Keil, Karl-Heinz; Greve, Heinz G.; and Reh, Kuno, 4,271,073, Cl. 260-315.000.
Reichl, Richard: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; and Reichl, Richard, 4,271,158, Cl. 424-248.500.
Reichold, Ernst: *See*—
Diller, Werner; Drope, Eckard; Ellendt, Gunther; and Reichold, Ernst, 4,271,121, Cl. 422-56.000.
Reiling, Karl: *See*—
Reiling, Reinhold; and Reiling, Karl, 4,270,315, Cl. 51-219.00R.
Reiling, Reinhold; and Reiling, Karl. Fixture for holding a twist drill to be reground. 4,270,315, Cl. 51-219.00R.
Reilly, Edward J.: *See*—
Williams, Glenn L.; and Reilly, Edward J., 4,271,414, Cl. 346-76.0PH.
Reinauer, Thomas V., to United States Filter Corporation. Filter assembly for high temperature glass fiber filter media. 4,270,935, Cl. 55-379.000.
Reisman, Elias; Goodsell, David S.; and Masino, Fred S., to Ford Aerospace & Communications Corp. Non-contacting thermal energy transfer assembly. 4,270,603, Cl. 165-185.000.
Rensselaer Polytechnic Institute: *See*—
Harteck, Paul, 4,271,137, Cl. 423-395.000.
Renth, Ernst-Otto: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; and Reichl, Richard, 4,271,158, Cl. 424-248.500.
Republic Steel Corporation: *See*—
Bhattacharyya, Aniruddha, 4,271,013, Cl. 210-617.000.
Esposito, Edward J.; and Blair, Matthew J. (said Matthew J. Blair assors. to), 4,270,949, Cl. 75-60.000.
Stone, Leonard R.; Aron, Steven J., Jr.; and Kemmerling, Robert A., 4,271,362, Cl. 250-496.000.
Research Frontiers Incorporated: *See*—
Saxe, Robert L., 4,270,841, Cl. 350-374.000.
Rhone-Poulenc Industries: *See*—
Belloc, Andre; Florent, Jean; Lunel, Jean; Mancy, Denise; and Palla, Jean-Claude, 4,271,067, Cl. 260-112.00R.
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,271,156, Cl. 424-246.000.
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,271,167, Cl. 424-263.000.
Choulet, Jean-Claude; and Nouvel, Jacques, 4,271,316, Cl. 562-480.000.
Deniel, Jean-Claude; Grossoleil, Jacques; and Roullet, Robert, 4,271,055, Cl. 260-29.6TA.
Richard Heinze GmbH & Co. KG: *See*—
Zernig, Ernst; and Pittasch, Willi, 4,270,240, Cl. 16-148.000.
Richards, Levie. Ointment for treatment of arthritis. 4,271,154, Cl. 424-195.000.
Ricoh Co., Ltd.: *See*—
Isayama, Takuro; Takemoto, Takeshi; Sato, Tsutomu; and Fukazawa, Takao, 4,271,366, Cl. 307-591.000.
Kurose, Morio; Ejiri, Koichi; and Maeda, Mamoru, 4,271,436, Cl. 358-296.000.
Riddell, John M.; and Schultz, William W., to Owens-Corning Fiberglas Corporation. Rotary fiber forming spinner. 4,270,943, Cl. 65-15.000.
Rigaku Industrial Corporation: *See*—
Ohtsuki, Nobuo; Yamada, Eiji; and Utaka, Tadashi, 4,271,353, Cl. 250-276.000.
Rinaldo, Daniel M.: *See*—
Kraft, Derald H.; and Rinaldo, Daniel M., 4,270,906, Cl. 474-135.000.
Rinard, George A.: *See*—
Steffen, Dale A.; Sturm, Ronald E.; and Rinard, George A., 4,270,547, Cl. 128-671.000.
Risdon Enterprises, Inc.: *See*—
Sullivan, William E.; Meetze, O. Murray, Jr.; and Seager, Richard H., 4,271,092, Cl. 261-30.000.
Rittel, Werner: *See*—
Kamber, Bruno; and Rittel, Werner, 4,271,068, Cl. 260-112.50R.
Rizkalla, Nabil: *See*—
Naglieri, Anthony N.; and Rizkalla, Nabil, 4,271,090, Cl. 260-550.000.
Robbins Company, The: *See*—
Owens, Lloyd J., 4,270,618, Cl. 175-57.000.
Robert Bosch GmbH: *See*—
Hertfelder, Wilhelm; Junginger, Erich; and Linder, Ernst, 4,270,726, Cl. 251-30.000.
Roberts, George W.: *See*—
Polinski, Leon M.; Roberts, George W.; and Hindin, Saul G., 4,270,896, Cl. 431-328.000.
Roberts, William M.: *See*—
McStravick, David M.; and Roberts, William M., 4,270,606, Cl. 166-181.000.
Robertson, Neil G. D.: *See*—
Jenkins, John M.; Pedder, Christopher T.; and Robertson, Neil G. D., 4,270,552, Cl. 131-290.000.
Robichaud, Robert H.: *See*—
Gilden, Sheldon J.; and Robichaud, Robert H., 4,270,544, Cl. 128-640.000.
Robinson, Edwin; and Buckle, David, to Deborah Fluidised Combustion Limited. Disposal of waste products by combustion. 4,270,468, Cl. 110-245.000.
Robinson, Gene P. Reversible toilet paper holder. 4,270,706, Cl. 242-55.200.
Robinson, Samuel C.; and Gerth, Howard L., to United States of America, Energy. Apparatus for correcting precision errors in slide straightness in machine tools. 4,270,421, Cl. 82-21.00A.
Robugen GmbH Pharmazeutische Fabrik: *See*—
Gauri, Kailash K., 4,271,153, Cl. 424-180.000.
Rockwell International Corporation: *See*—
Crawford, Donald G., 4,271,410, Cl. 340-765.000.
Crouse, Allen G., 4,270,972, Cl. 156-605.000.
Grogan, Martin L., 4,271,449, Cl. 361-94.000.
Rockwell Intl. Corp.: *See*—
Dlugos, Daniel F.; and Harenberg, Donald D., 4,271,470, Cl. 364-466.000.
Rodler, Hans. Apparatus for examining biological bodies with electromagnetic fields. 4,270,545, Cl. 128-653.000.
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, to U C B Societe Anonyme. 6-Amino-spiro[penam-2,4'-piperidine]-3-carboxylic acids, antibacterial compositions thereof and method of use thereof. 4,271,172, Cl. 424-267.000.
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, to U C B, Societe Anonyme. 6-Amino-spiro[penam-2,4'-piperidine]-3-carboxylic acid, antibacterial compositions thereof and method of use thereof. 4,271,173, Cl. 424-267.000.
Rodriguez-Perazza, Manuel, to GTE Laboratories Incorporated. Link chain for power drives. 4,270,907, Cl. 474-200.000.
Rodth, Joseph J., to Alco Foodservice Equipment Company. Electric gravity dispensing valve. 4,270,673, Cl. 222-129.300.
Roediger, Hanns E., to Techtransfer GmbH. Method for drying and sterilizing sewage sludge. 4,270,279, Cl. 34-9.000.
Roehrs, Robert E.: *See*—
Schoenwald, Ronald D.; and Roehrs, Robert E., 4,271,143, Cl. 424-78.000.
Rogers Corporation: *See*—
Chesmer, Alec D.; and Turner, Joseph, 4,270,656, Cl. 198-847.000.
Mette, Manfred, 4,270,585, Cl. 141-37.000.
Mette, Manfred, 4,270,585, Cl. 141-37.000.
Rohco, Inc.: *See*—
Eckles, William E.; and Canaris, Valerie M., 4,270,988, Cl. 204-50.00R.
Eckles, William E.; and McFarland, Charles W., 4,270,989, Cl. 204-50.00R.
Rohm GmbH: *See*—
Trabitzsch, Hans; Frieser, Josef; Koschik, Achim; and Plainer, Hermann, 4,271,058, Cl. 260-29.60M.
Rohm, Gunter H. Split-jaw lathe chuck with lockable inner jaw parts. 4,270,763, Cl. 279-123.000.
Rohm and Haas Company: *See*—
Flaskett, Peter J., 4,270,964, Cl. 156-228.000.
Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., 4,271,308, Cl. 548-262.000.
Shah, Nipun M., 4,271,287, Cl. 528-272.000.
Rohr Industries, Inc.: *See*—
Brown, William D., 4,271,219, Cl. 428-116.000.
Rolls-Royce Limited: *See*—
Dawson, Lindsay G., 4,270,346, Cl. 60-243.000.

Jones, William R., 4,271,116, Cl. 264-221.000.
McMurtry, David R., 4,270,275, Cl. 33-174.00L.
Romaine, Richard A. Automatic hypodermic syringe. 4,270,537, Cl. 128-218.00A.
Rooney, Clarence S.: *See—*
Atkinson, Joseph G.; Rooney, Clarence S.; Girard, Yves; and Engelhardt, Edward L., 4,271,187, Cl. 424-309.000.
Rosen, William E.: *See—*
Berke, Philip A.; and Rosen, William E., 4,271,176, Cl. 424-273.00R.
Rosenband, Phillip, to Parsteel Products & Services Company, Inc. Battery storage rack. 4,270,661, Cl. 211-49.00D.
Ross, Charles W., to Leeds & Northrup Company. Control of parallel operated turbines in cogeneration. 4,271,473, Cl. 364-494.000.
Rossi, Alessandro: *See—*
Melloni, Piero; Della Torre, Arturo; Carniel, Giovanni C.; and Rossi, Alessandro, 4,271,160, Cl. 424-248.540.
Rossi, Anthony J.; and Behringer, Donald F., to General Electric Company. Turbine control. 4,270,357, Cl. 60-660.000.
Rossman, Axel; and Zech, Herbert, to Motoren-und Turbinen-Union. Process for the manufacture of rotationally-symmetrical components from short-fibered molding material. 4,271,112, Cl. 264-86.000.
Rossow, Harold E.: *See—*
Lane, George A.; and Rossow, Harold E., 4,271,029, Cl. 252-70.000.
Rothenberg GmbH & Co., Firma: *See—*
Weil, Manfred; and Rothenberger, Gunter, 4,270,269, Cl. 30-102.000.
Rothenberger, Gunter: *See—*
Weil, Manfred; and Rothenberger, Gunter, 4,270,269, Cl. 30-102.000.
Roullet, Robert: *See—*
Daniel, Jean-Claude; Grossoleil, Jacques; and Roullet, Robert, 4,271,055, Cl. 260-29.6TA.
Rowles, Howard C.; and Woodward, Donald W., to Air Products and Chemicals, Inc. Separation of hydrogen containing gas mixtures. 4,270,939, Cl. 62-22.000.
Rowles, Howard C.; and Tsao, Tsun-chiu, to Air Products and Chemicals, Inc. Recovery of C_2 hydrocarbons from demethanizer overhead. 4,270,940, Cl. 62-28.000.
Roy, Pradip K.: *See—*
Fariel, Harry F.; Rudolph, Marvin J.; Hynson, Richard B.; Roy, Pradip K.; and Kleiner, Fredric, 4,271,206, Cl. 426-572.000.
Roy, Raymond L.: *See—*
Hopkins, Walter; Friello, Dominick R.; Cherukuri, Subraman R.; Roy, Raymond L.; and Mackay, Donald A. M., 4,271,197, Cl. 426-3.000.
Rubin, Albert L.: *See—*
Miyata, Teruo; Rubin, Albert L.; and Stenzel, Kurt H., 4,271,070, Cl. 260-123.700.
Rudolph, Marvin J.: *See—*
Fariel, Harry F.; Rudolph, Marvin J.; Hynson, Richard B.; Roy, Pradip K.; and Kleiner, Fredric, 4,271,206, Cl. 426-572.000.
Ruhnau, Gerhard; Gudat, Wolfgang; Lindemann, Klaus; and Saba, Manfred, to WABCO Fahrzeugbremsen GmbH. Circuit for influencing the brake-pressure release and/or brake-pressure holding phases for antilocking vehicle brake systems. 4,270,810, Cl. 303-106.000.
Rusby, Frank L.: *See—*
Palmer, Wilbur C.; and Rusby, Frank L., 4,271,345, Cl. 219-10.790.
Ryder, David J.: *See—*
Pelter, Andrew; and Ryder, David J., 4,271,317, Cl. 564-8.000.
Ryder International Corporation: *See—*
Van Meter, Arch, 4,271,020, Cl. 210-133.00Q.
S&C Electric Company: *See—*
Meister, Otto; and Tobin, Thomas J., 4,271,339, Cl. 200-144.00C.
S.O.L.E. Societa Opitergina Lavorazioni Elettroplastiche S.p.A.: *See—*
Pengo, Giuseppe; and Schwerdhofer, Hans J., 4,270,411, Cl. 74-752.00E.
Saab-Scania AB: *See—*
Johnsson, Tage R. W., 4,270,639, Cl. 192-53.00F.
Saab-Scania Aktiebolag: *See—*
Beijer, Per A. O.; and Strandas, Lars O., 4,270,412, Cl. 74-801.000.
Saba, Manfred: *See—*
Ruhnau, Gerhard; Gudat, Wolfgang; Lindemann, Klaus; and Saba, Manfred, 4,270,810, Cl. 303-106.000.
Sabick, Rodney M.: *See—*
Jenkins, John P.; Sabick, Rodney M.; and Kidd, William W., 4,271,440, Cl. 360-92.000.
Sachs-Systemtechnik GmbH: *See—*
Tellert, Rudy, 4,270,414, Cl. 74-852.000.
Saft Leclanche: *See—*
Broussely, Michel; and Baudry, Sylvie, 4,271,243, Cl. 429-194.000.
Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Gabano, Jean-Paul; and Broussely, Michel, 4,271,244, Cl. 429-197.000.
Sagami Chemical Research Center: *See—*
Saito, Tomoo; Nishiyama, Yumiko; Watanabe, Kazuo; Taki, Naoko; and Morikawa, Naotake, 4,271,035, Cl. 252-301.170.
Sahajdak, Steven L., to Pileco, Inc. Apparatus for measuring the fall height of a pile driver ram. 4,271,475, Cl. 364-506.000.
St. Germain, Roger L.: *See—*
Glass, Jeremy M.; Lampke, George G.; and St. Germain, Roger L., 4,271,412, Cl. 343-5.0FT.
Saint-Gobain Industries: *See—*
Bourdin, Francis, 4,270,600, Cl. 165-104.310.
Lavoisey, Yves; and Nierlich, Jean, 4,270,682, Cl. 225-1.000.
Saito, Mitsutaka, to Toyo Soda Manufacturing Co., Ltd. Process for producing glycol. 4,270,992, Cl. 204-59.00R.
Saito, Takaharu: *See—*
Ishii, Shinya; Saito, Takaharu; Sugiyama, Masahiko; and Kamo, Takashi, 4,270,691, Cl. 228-194.000.
Saito, Tomoo; Nishiyama, Yumiko; Watanabe, Kazuo; Taki, Naoko; and Morikawa, Naotake, to Sagami Chemical Research Center. Liquid scintillator solution. 4,271,035, Cl. 252-301.170.
Sajus, Lucien: *See—*
Durand, Daniel; Hillion, Gerard; Lassau, Christian; and Sajus, Lucien, 4,271,323, Cl. 568-816.000.
Sakamaki, Hisashi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,270,857, Cl. 355-8.000.
Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Channel selector. 4,271,434, Cl. 358-193.100.
Sakano, Hajime; Nakai, Fumio; and Tomari, Yukio, to Sumitomo Naugatuck Co., Ltd. Foamed urethane composite. 4,271,230, Cl. 428-315.000.
Sakashita, Nobuyuki: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,270,948, Cl. 71-100.000.
Sakuma, Fujio: *See—*
Tomura, Yasushi; Sakuma, Fujio; Suzuki, Seiji; and Shimizu, Masayuki, 4,271,280, Cl. 526-65.000.
Sampietro, Achilles C. Refrigeration apparatus. 4,270,365, Cl. 62-238.300.
Samuels, Donald H., to Hasbro Industries, Inc. Toy wheeled vehicle. 4,270,305, Cl. 46-221.000.
Sanada, Masakatsu: *See—*
Kawai, Hisasi; Ito, Toshimitsu; Sanada, Masakatsu; and Iwase, Kazuo, 4,271,469, Cl. 364-431.000.
Sandmore, Donald K., to Western Electric Company, Inc. Method and apparatus for cutting and racking lead frame strips of boxed capacitors. 4,270,424, Cl. 83-167.000.
Sandstrom, Ake O.; Falk, Bo G.; and Bystedt, H. S. Ingemar, to Defibrator AB. Method of producing peroxide bleached pulp. 4,270,976, Cl. 162-26.000.
Sandvik Aktiebolag: *See—*
Andersson, Ken G. E., 4,270,422, Cl. 82-36.00R.
Saner, Kaspar; Wirth, Johannes; and Gallo, Mario, to Wirth, Gallo & Co. Mass and force meter. 4,270,384, Cl. 73-862.590.
Sangster, John H.: *See—*
Coombes, Daniel J.; and Sangster, John H., 4,271,520, Cl. 371-42.000.
Sano, Ichiro: *See—*
Suzuki, Yuichi; and Sano, Ichiro, 4,271,245, Cl. 429-243.000.
Santal Equipamentos S.A. Comercio E. Industria: *See—*
Pinto, Luiz A. C. D. R., 4,270,337, Cl. 56-13.900.
Santore, Michael. Spring loaded adjustable coupling. 4,270,367, Cl. 64-23.000.
Sanyo Chemical Industries, Ltd: *See—*
Tanaka, Itsuya; and Fujii, Toshikazu, 4,271,217, Cl. 428-96.000.
Sanzenbacher, Charles W.; and Scarlett, John C., to Midrex Corporation. Apparatus for producing molten iron by submerged combustion. 4,270,740, Cl. 266-157.000.
Sarrach, Donald J.: *See—*
Wacks, Harvey H.; Izu, Masatsugu; and Sarrach, Donald J., 4,271,257, Cl. 430-276.000.
Sasaki, Koji; and Harada, Yasukazu, to Zeria-Shinyaku Kogyo Kabushiki Kaisha. Urokinase preparation for oral administration. 4,271,150, Cl. 424-177.000.
Sassi, Kari, to Konejukka Oy. Apparatus for transferring torque from a driving shaft to a driven shaft. 4,270,638, Cl. 192-45.100.
Sato, Katsuhiko: *See—*
Shida, Masaharu; Torisawa, Akira; Ueda, Makoto; Mandai, Masaaki; Sato, Katsuhiko; and Asano, Kazuhiro, 4,271,496, Cl. 368-80.000.
Sato, Makoto: *See—*
Ohmori, Taiji; and Sato, Makoto, 4,270,809, Cl. 303-92.000.
Sato, Masamichi; and Matsumoto, Kenji, to Fuji Photo Film Co., Ltd. Method for producing a multicolor optical filter. 4,271,246, Cl. 430-7.000.
Sato, Ryuichi: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,271,084, Cl. 260-429.00R.
Sato, Tadashi: *See—*
Minoura, Kazuo; Sugiura, Muneharu; Minami, Setsuo; and Sato, Tadashi, 4,270,858, Cl. 355-8.000.
Sato, Tsutomu: *See—*
Isayama, Takuro; Takemoto, Takeshi; Sato, Tsutomu; and Fukazawa, Takao, 4,271,366, Cl. 307-591.000.
Sato, Tsuyoshi: *See—*
Hirato, Motoshiro; Kawagoe, Hazime; Abe, Kazuo; Sato, Tsuyoshi; Miyake, Yasuhiko; Nagai, Masahiro; Furuichi, Katsuhisa; and Shimojima, Kiyoshi, 4,270,373, Cl. 72-41.000.
Satoh, Hiroshi: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,271,084, Cl. 260-429.00R.
Saunders, Robert C.; Au, Dean T.; Williams, W. Ray; and Zurek, Donald, to Honeywell Information Systems Inc. Wire wrap operator check system. 4,271,472, Cl. 364-481.000.

Savell, Charles L., to Ford Motor Company. Displaceable lamp. 4,270,787, Cl. 293-121.000.

Savit, Joseph: *See—*
Lewinton, Colin H.; and Savit, Joseph, 4,271,250, Cl. 430-127.000.

Sawada, Yoshikatsu: *See—*
Ito, Yoshiyashu; Sugiura, Takeo; and Sawada, Yoshikatsu, 4,270,449, Cl. 101-129.000.

Saxe, Charles L., to Tektronix, Inc. High-speed acquisition system employing an analog memory matrix. 4,271,488, Cl. 365-230.000.

Saxe, Robert L., to Research Frontiers Incorporated. Light valve containing suspension of perhalide of alkaloid acid salt. 4,270,841, Cl. 350-374.000.

Scarlett, John C.: *See—*
Sanzenbacher, Charles W.; and Scarlett, John C., 4,270,740, Cl. 266-157.000.

Schaefer, Rudolf. Assembly of wall elements. 4,270,324, Cl. 52-285.000.

Schaling, Wolfgang, to Daimler-Benz Aktiengesellschaft. Apparatus including a shift register for testing different types of cable sets. 4,271,388, Cl. 324-51.000.

Scheibitz, Wolfgang: *See—*
Schrodter, Klaus; Scheibitz, Wolfgang; and Ehlers, Klaus-Peter, 4,271,128, Cl. 422-189.000.

Schellenberg, Matthias: *See—*
Mason, Leslie F. A.; Cook, Robert S.; Kilcast, David; Schellenberg, Matthias; and Chylewski, Christoph, 4,271,254, Cl. 430-239.000.

Schellhammer, Carl-Wolfgang: *See—*
Bremen, Josef; Wehling, Bernhard; and Schellhammer, Carl-Wolfgang, 4,271,293, Cl. 542-435.000.

Schenk, Erwin, to Siemens Aktiengesellschaft. Method for transmitting data. 4,271,508, Cl. 370-106.000.

Scherzinger, Bernhard; and Flaig, Hans, to Gebruder Junghans GmbH. Electronic clock with a chime system. 4,271,495, Cl. 368-75.000.

Schiffmann, Robert F.; Mirman, Alfred H.; and Grillo, Richard J., to International Telephone and Telegraph Corporation. Microwave proofing and baking bread utilizing metal pans. 4,271,203, Cl. 426-243.000.

Schilling, L. Louis. Device for controlling swinging drawbar of farm tractor. 4,270,767, Cl. 280-477.000.

Schlindwein, Walter: *See—*
Hansen, Guenter; Pottgiesser, Hermann; and Schlindwein, Walter, 4,271,231, Cl. 428-323.000.

Schlotterbeck, Earl S.: *See—*
Widdowson, Richard E.; Connolly, James B.; Schlotterbeck, Earl S.; and Livesay, J. D., 4,270,934, Cl. 55-316.000.

Schmaus, Hermann: *See—*
Knobl, Alois; Zeitner, Alfred; Krockow, Helmut; and Schmaus, Hermann, 4,271,454, Cl. 361-274.000.

Schmidt, Dieter, to Hoffmann-La Roche Inc. Pharmaceutical compositions for parenteral or local administration. 4,271,196, Cl. 424-358.000.

Schmidt, Gerhard: *See—*
Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus, 4,271,207, Cl. 427-6.000.

Schmidt, Horst, to Windmoller & Holscher. Reclosable cross-bottom sack. 4,270,677, Cl. 222-561.000.

Schmidt, Wallace B.; Lewis, William W.; Edmiston, Alex; and Klauser, Gernot, to Airco, Inc. Processes for decontaminating nuclear process off-gas streams. 4,270,938, Cl. 62-22.000.

Schmidt, Werner; and Minke, Rudiger, to Dynamit Nobel Aktiengesellschaft. Flameproofed polyesters of improved viscosity. 4,271,274, Cl. 525-111.000.

Schmit, Joseph L.; and Scott, M. Walter, to Honeywell Inc. Growth of thallium-doped silicon from a tin-thallium solution. 4,270,973, Cl. 156-605.000.

Schmitt, Frederick L.: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,271,324, Cl. 568-824.000.

Schmitt, Richard L.: *See—*
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Schneider, Kenneth W.: *See—*
Maring, Oscar M.; and Schneider, Kenneth W., 4,270,363, Cl. 62-179.000.

Schneider Metal Manufacturing Company: *See—*
Maring, Oscar M.; and Schneider, Kenneth W., 4,270,363, Cl. 62-179.000.

Schneider, Walter: *See—*
Deneke, Ulfert; Stahl, Peter; and Schneider, Walter, 4,271,265, Cl. 435-16.000.

Schneiter, Ali: *See—*
Zafferri, Roberto; Schneiter, Ali; and Besson, Rene, 4,271,498, Cl. 368-250.000.

Schoenwald, Ronald D.; and Roehrs, Robert E., to Alcon Laboratories, Inc. Sustained release ophthalmic drug dosage. 4,271,143, Cl. 424-78.000.

Schon, Manfred: *See—*
Michel, Walter; Honel, Hans; Schon, Manfred; and Kaiser, Wolfgang, 4,271,286, Cl. 528-254.000.

Schon, Otmar. Clamping ring for tubular members. 4,270,250, Cl. 24-263.00A.

Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, to Dynamit Nobel Aktiengesellschaft. Iron oxide magnetic pigments for the production of magnetic coatings. 4,271,234, Cl. 428-405.000.

Schramm, Werner, to PFP-Anstalt fur Produktentwicklung und Verwertung. Presentation stands for the sorted exhibition of goods. 4,270,461, Cl. 108-31.000.

Schreiber, William L.: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,271,324, Cl. 568-824.000.

Schreiner-Hansen, Ib. Method of producing a clay pigeon. 4,271,118, Cl. 264-333.000.

Schreyer, Gerd: *See—*
Hentsche, Klaus; Bittner, Friedrich; and Schreyer, Gerd, 4,271,297, Cl. 544-190.000.

Schrodter, Klaus; Scheibitz, Wolfgang; and Ehlers, Klaus-Peter, to Hoechst Aktiengesellschaft. Apparatus for recovering alcoholic phosphoric acid solutions from acid phosphates. 4,271,128, Cl. 422-189.000.

Schromm, Kurt: *See—*
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; and Reichl, Richard, 4,271,158, Cl. 424-248.500.

Schubart, Rudiger; and Braden, Rudolf, to Bayer Aktiengesellschaft. Process for the preparation of optionally substituted acetonitriles monohalogenated in the α-position. 4,270,998, Cl. 204-158.0HA.

Schulman, Richard E.: *See—*
Breen, William C.; and Schulman, Richard E., 4,270,501, Cl. 123-350.000.

Schultz, Daryl A. Animal trap and trigger mechanism. 4,270,300, Cl. 43-82.000.

Schultz, William W.: *See—*
Riddell, John M.; and Schultz, William W., 4,270,943, Cl. 65-15.000.

Schumacher, Peter L.: *See—*
Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., 4,270,899, Cl. 432-58.000.

Schuster, Samuel J. Breathable, sterilizable receptacles for storing articles in sterile condition. 4,270,658, Cl. 206-439.000.

Schwanbom, Erik: *See—*
Baum, Marcel; Frankenberger, Horst; and Schwanbom, Erik, 4,270,530, Cl. 128-204.250.

Schwartz, Boris. Laminated strip for skin thickness control for use with dermatome apparatus and method of using the same. 4,270,540, Cl. 128-305.500.

Schwartz, Eric D.: *See—*
Curry, Robert E.; Simonsen, Michael G.; and Schwartz, Eric D., 4,271,123, Cl. 422-64.000.

Schwartzkopf, Anton, to Anton Schwartzkopf Stahl- und Fahrzeugbau, Firma. Overhead track assembly for amusement-park ride. 4,270,458, Cl. 104-124.000.

Schwarz, Frank. Selective infrared detector. 4,271,358, Cl. 250-338.000.

Schwarz, Volker: *See—*
Heckel, Klaus; Klaffke, Friedemann; Umann, Walter; and Schwarz, Volker, 4,271,218, Cl. 428-36.000.

Schwarzkopf, Anton, to Anton Schwarzkopf Stahl- u. Fahrzeugbau, Firma. Chain-type ascent system for roller coaster. 4,270,459, Cl. 104-172.00B.

Schwerdhofer, Hans J.: *See—*
Pengo, Giuseppe; and Schwerdhofer, Hans J., 4,270,411, Cl. 74-752.00E.

Sciotti, Robert; and Dougherty, Michael, to Colt Industries Operating Corp. Fuel bowl vent. 4,270,504, Cl. 123-520.000.

SCM Corporation: *See—*
Golownia, Robert F., 4,271,277, Cl. 525-351.000.
Puhk, Heino, 4,271,283, Cl. 526-317.000.

Scott & Fetzer Company, The: *See—*
Lee, Maw H., 4,271,386, Cl. 318-729.000.

Scott, James W.; Bancsi, Joseph A.; and Kersten, Jean, to Baxter Travenol Laboratories, Inc. Roller clamp for defining a flow lumen in tubing. 4,270,725, Cl. 251-6.000.

Scott, M. Walter: *See—*
Schmit, Joseph L.; and Scott, M. Walter, 4,270,973, Cl. 156-605.000.

Scott Paper Company: *See—*
Hosmer, William A., 4,271,221, Cl. 428-172.000.

Scott, Robert S.: *See—*
Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., 4,271,445, Cl. 361-56.000.

Scott, Xenophon. Time lapse videotape editor/controller. 4,271,437, Cl. 360-9.000.

SDS-Electro GmbH: *See—*
Nishimura, Hiromi; and Fukuzono, Hideki, 4,271,450, Cl. 361-155.000.

Seager, Richard H.: *See—*
Sullivan, William E.; Meetze, O. Murray, Jr.; and Seager, Richard H., 4,271,092, Cl. 261-30.000.

Seals Eastern Inc.: *See—*
Hertz, Daniel L., Jr., 4,270,761, Cl. 277-12.000.

Seaward International, Inc.: *See—*
March, Frank A.; and Brown, Louis S., Jr., 4,270,874, Cl. 405-63.000.

Seawell, Albert C. Methods of using Chlamydia vaccine for preventing and treating bovine and ovine diseases. 4,271,146, Cl. 424-89.000.

Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See—*
Hancock, Roger H. Y.; and Kerr, Neil, 4,270,480, Cl. 114-296.000.

Segal, Sheldon J.: *See*—
Tsong, Yun-Yen; Talwar, Gursaran P.; Koide, Samuel; and Segal, Sheldon J., 4,271,069, Cl. 260-112.50R.

Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., to Rohm and Haas Company. 4-alkyl-1,2,4-4H-triazole derivatives. 4,271,308, Cl. 548-262.000.

Seidl, Charles H.: *See*—
Singer, Richard M.; and Seidl, Charles H., 4,270,333, Cl. 52-818.000.

Seikai, Shigeyuki: *See*—
Uchida, Naoya; Seikai, Shigeyuki; Yoshimura, Kozo; and Yamanishi, Toru, 4,270,840, Cl. 350-96.340.

Seiko Koki Kabushiki Kaisha: *See*—
Takazawa, Yuzuru; and Nagaoka, Shinji, 4,270,851, Cl. 354-21.000.

Seiler, Claus-Dietrich: *See*—
Schonafinger, Eduard; Deigner, Paul; Ohlinger, Manfred; Jakusch, Helmut; Amort, Jurgen; Nestler, Heinz; Seiler, Claus-Dietrich; and Ambros, Otto, 4,271,234, Cl. 428-405.000.

Seilly, Alec H., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,270,502, Cl. 123-357.000.

Seitz, Karl, to Ciba-Geigy Corporation. Reactive dyes, processes for their production and use thereof. 4,270,918, Cl. 8-549.000.

Sekiguchi, Kazuhiko, to Zebra Co., Ltd. Composite writing instrument. 4,270,869, Cl. 401-30.000.

Semenova, Neonila M.: *See*—
Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V., 4,271,282, Cl. 526-174.000.

Semeny, Valery Y.: *See*—
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.

Service Master Industries, Inc.: *See*—
Shallenberg, Robert L.; and Blomgren, Roland A., 4,270,238, Cl. 15-321.000.

Seton Company: *See*—
Prentiss, William C., 4,270,912, Cl. 8-94.260.

Setsuda, Tsutomu; Aizawa, Hideyuki; and Kimura, Takeshi, to Toray Industries, Inc. Process for preparing amino schiff base or corresponding diamino ketone. 4,271,318, Cl. 564-468.000.

Severson, Verne L.; and Tomfohrde, Charles E., to Data 100 Corporation. Coaxial cable switching circuit. 4,271,403, Cl. 340-147.00C.

Shackle, Peter W.: *See*—
Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., 4,271,445, Cl. 361-56.000.

Shaffer, Robert W.; and Morse, Henry W., to Ingersoll-Rand Company. Unloading means for a gas compressor. 4,270,885, Cl. 417-279.000.

Shah, Nipun M., to Rohm and Haas Company. Process for the continuous polymerization of polyethylene terephthalate in the solid phase. 4,271,287, Cl. 528-272.000.

Shalganova, Valeria G.: *See*—
Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V., 4,271,282, Cl. 526-174.000.

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Shamrai, Gennady F.: *See*—
Glushko, Mikhail F.; Skalatsky, Viktor K.; Zakhryamin, Anatoly D.; and Shamrai, Gennady F., 4,270,341, Cl. 57-215.000.

Sharlow, Roger C., to Liquid Paper Corporation. Typewriter ribbon spool core shaft adapter. 4,270,707, Cl. 242-56.900.

Sharp Kabushiki Kaisha: *See*—
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,270,472, Cl. 112-158.00E.
Tanaka, Shinichi, 4,271,404, Cl. 340-365.00S.

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Judin, Viktor P.; Shatalov, Valentin P.; Kovtunenko, Leonid V.; Shalganova, Valeria G.; Kashkina, Nadezhda K.; Mistjukova, Lidia N.; Semenova, Neonila M.; Korbanova, Zinaida N.; Mitin, Ivan P.; Moiseev, Vladimir V.; and Kosovtsev, Vladimir V., 4,271,282, Cl. 526-174.000.

Sheber, Thomas F. Embossed concrete building panels and method. 4,271,111, Cl. 264-71.000.

Shelestak, Larry J.: *See*—
Amrhein, Alan G.; Hammel, Joseph J.; and Shelestak, Larry J., 4,270,945, Cl. 65-99.00A.

Shell Oil Company: *See*—
Haynes, George R., 4,271,185, Cl. 424-285.000.
Keasling, Hugh H., 4,271,195, Cl. 424-330.000.

Shellenberger, Richard H., to SHS Research Labs, Inc. Manual belt electro-optical control. 4,271,354, Cl. 250-211.00K.

Shephard, Donald L., to Shephard, Helen I., a part interest. Fluted tool. 4,270,418, Cl. 81-90.00D.

Shephard, Helen I.: *See*—
Shephard, Donald L., 4,270,418, Cl. 81-90.00D.

Sherman, Richard H.: *See*—
Gable, Melvin G.; Sherman, Richard H.; and Jeyabalan, Vadivelu, 4,271,507, Cl. 370-94.000.

Sherry, Howard S.: *See*—
Oleck, Stephen M.; Sherry, Howard S.; Fischer, Ronald H.; and Milstein, Donald, 4,271,042, Cl. 252-439.000.

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Brownell, Richard G., 4,270,778, Cl. 285-305.000.

Shibuya, Takahiro: *See*—
Maejima, Hiroshi; Fujimura, Noriaki; Shibuya, Takahiro; and Akagi, Shigeyuki, 4,271,513, Cl. 371-22.000.

Shida, Masaharu; Torisawa, Akira; Ueda, Makoto; Mandai, Masaaki; Sato, Katsuhiko; and Asano, Kazuhiro, to Kabushiki Kaisha Daini Seikosha. Electronic watch. 4,271,496, Cl. 368-80.000.

Shima, Takeshi: *See*—
Torii, Ken-Ichi; and Shima, Takeshi, 4,271,531, Cl. 455-182.000.

Shimada, Hiroaki, to Kotobuki Sangyo Kabushiki Kaisha. Twist roller guide device for rolling mill use. 4,270,376, Cl. 72-231.000.

Shimano Industrial Company, Limited: *See*—
Nagano, Masashi, 4,270,402, Cl. 74-473.00R.
Watarai, Etsuyoshi, 4,270,481, Cl. 116-28.100.

Shimatani, Shirou; Orita, Ryohji; and Obokata, Tsuneo, to Mitsui Engineering & Shipbuilding Co., Ltd. Machine for underwater painting. 4,270,484, Cl. 118-305.000.

Shimizu, Akira: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,270,860, Cl. 355-14.00R.

Shimizu, Hiromichi, to Daiwa Can Company, Limited. Method for coating a cylindrical can body. 4,271,216, Cl. 427-428.000.

Shimizu, Masayuki: *See*—
Tomura, Yasushi; Sakuma, Fujio; Suzuki, Seiji; and Shimizu, Masayuki, 4,271,280, Cl. 526-65.000.

Shimizu, Shigeki; and Ide, Hiroshi, to Mitsubishi Chemical Industries Limited. Developer composition for lithographic printing plates. 4,271,261, Cl. 430-325.000.

Shimizu, Toshio; Ichinose, Susumu; and Ooba, Yuji, to Nippon Telegraph and Telephone Public Corporation. Slit type ink recording apparatus. 4,271,416, Cl. 346-140.00R.

Shimojima, Kiyoshi: *See*—
Hirato, Motoshiro; Kawagoe, Hazime; Abe, Kazuo; Sato, Tsuyoshi; Miyake, Yasuhiko; Nagai, Masahiro; Furuichi, Katsuhisa; and Shimojima, Kiyoshi, 4,270,373, Cl. 72-41.000.

Shimotsuma, Teruo; Kunioka, Kazuo; Nishio, Hiroaki; and Okuyama, Yasuo, to Nippon Kokan Kabushiki Kaisha. Method for recovering and utilizing heat of coke-oven gas. 4,270,980, Cl. 201-28.000.

Shin-Etsu Chemical Co. Ltd.: *See*—
Cho, Kenji; Takamizawa, Minoru; and Inoue, Yoshio, 4,271,255, Cl. 430-253.000.

Shinjo, Goro: *See*—
Yamaguchi, Takashi; Shinjo, Goro; and Okuno, Yoshitoshi, 4,271,180, Cl. 424-274.000.

Shinshu Seiki Kabushiki Kaisha: *See*—
Endo, Takeshi, 4,271,383, Cl. 318-375.000.
Tezuka, Chikao; and Mikoshiba, Hitoshi, 4,270,448, Cl. 101-99.000.

Shionogi & Co., Ltd.: *See*—
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,295, Cl. 544-182.000.
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Shiozaki, Shigeru: *See*—
Mitsuishi, Yukio; Shiozaki, Shigeru; and Hasegawa, Kinji, 4,270,308, Cl. 47-17.000.

Shiraiwa, Toshio; Yamaguchi, Hisao; Matsumoto, Shigeaki; Tomabechi, Masatoshi; and Nakajima, Kimio, to Sumitomo Metal Industries Limited. Method and apparatus for the automatic ultrasonic flaw detection. 4,270,389, Cl. 73-612.000.

Shirato, Takeshi, to Mitsui Engineering & Shipbuilding Co., Ltd. Method and apparatus for recovery of energy from blast furnace exhaust gas. 4,270,343, Cl. 60-39.050.

Shirokov, Alexandr A.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; Khantimirov, Sergei S.; and Shirokov, Alexandr A., 4,271,367, Cl. 310-13.000.

Shitrai, Arie, to Israel Aircraft Industries Limited. Electrical slip ring and brush ring assembly. 4,271,336, Cl. 200-24.000.

Shmizu, Yoshiaki: *See*—
Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; Hayashi, Atsuko, heir; Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, 4,271,310, Cl. 560-71.000.

Shop-Vac Corporation: *See*—
Berfield, Robert C., 4,270,668, Cl. 220-324.000.

Shore, David: *See*—
Lintonbon, Robert F.; and Shore, David, 4,270,884, Cl. 417-15.000.

Shreve, James S., to United States of America, Army. Null mask. 4,271,413, Cl. 343-100.0SA.

SHS Research Labs, Inc.: *See*—
Shellenberger, Richard H., 4,271,354, Cl. 250-211.00K.

Shure Brothers, Inc.: *See*—
Kehl, Joseph D., 4,270,758, Cl. 369-170.000.

Shy, James L.; and Hess, Paul D., to Allis-Chalmers Corporation. Suspension preheater. 4,270,900, Cl. 432-58.000.

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Gill, Bernard J.; Siegal, Burton L.; and Goettsche, Randy P., 4,270,454, Cl. 101-348.000.

Siekmeier, David A.; Andersen, Glen L.; Zimmerer, Arthur L., deceased; by First National Bank & Trust Co., joint executor; by Zimmerer, Bernadette, joint executor; and Zimmerer, William P. Laterally mobile irrigation system. 4,270,699, Cl. 239-184.000.

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Birzele, Paul; and Geitz, Gerhard, 4,271,518, Cl. 371-37.000.
Bradler, Peter; and Stepina, Jaroslav, 4,271,380, Cl. 318-245.000.
Fink, Helmuth; and Van der Gucht, Karel, 4,271,478, Cl. 364-580.000.
Franetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, 4,270,532, Cl. 128-213.00R.
Geldner, Ernst; Friedel, Rudolf; and Haberrecker, Klaus, 4,271,372, Cl. 313-330.000.
Heinzl, Joachim, 4,270,589, Cl. 150-0.500.
Herbst, Heiner, 4,271,428, Cl. 358-54.000.
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Krauss, Karl-Heinz, 4,271,517, Cl. 371-37.000.
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Speeter, Winfried, 4,271,124, Cl. 422-68.000.
Weisse, Hans-Jorg, 4,270,264, Cl. 29-599.000.

Sifco Industries, Inc.: *See—*
Smith, Gary W., 4,270,986, Cl. 204-48.000.

Sigma Instruments, Inc: *See—*
Beling, Thomas E.; and Bric, Leopold, 4,271,384, Cl. 318-685.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-6-hydroxy-7a-homo-PGI_1 compounds. 4,271,077, Cl. 260-345.200.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-6,9α-epoxymethano-PGF compounds. 4,271,078, Cl. 260-345.200.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-19-keto-PG compounds. 4,271,292, Cl. 542-429.000.

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Simon, Wolfgang: *See—*
Marschollek, Michael; Simon, Wolfgang; and Walter, Carl, 4,271,126, Cl. 422-143.000.

Simonsen, Michael G.: *See—*
Curry, Robert E.; Simonsen, Michael G.; and Schwartz, Eric D., 4,271,123, Cl. 422-64.000.

Simpson, David A.: *See—*
Breslow, David S.; and Simpson, David A., 4,271,259, Cl. 430-286.000.

Simpson, Ronald R. Intruder alarm system. 4,271,491, Cl. 367-136.000.

Sindlinger, Ronald E.: *See—*
Armstrong, Donald E.; Sindlinger, Ronald E.; and Harvey, William J., 4,270,897, Cl. 431-362.000.

Singer, Alfred R. E.; and Evans, Russell W., to National Research Development Corporation. Method and apparatus for measuring strength characteristics. 4,270,383, Cl. 73-82.000.

Singer Company, The: *See—*
Brienza, Michael J., 4,270,473, Cl. 112-158.00E.
Hoffman, Jay, 4,270,387, Cl. 73-504.000.
Krupick, Walter J., 4,270,392, Cl. 74-5.00F.
Sistare, James R., 4,271,342, Cl. 200-157.000.
Stiles, John C.; and Elbert, Hubert F., 4,271,397, Cl. 331-94.50C.

Singer, Richard M.; and Seidl, Charles H., to Kane Manufacturing Corporation. Security screen. 4,270,333, Cl. 52-818.000.

Siryj, Bohdan W.; and Gilson, Alan P., to RCA Corporation. Optical disc player system. 4,271,489, Cl. 369-38.000.

Sistare, James R., to Singer Company, The. Lock-on trigger switch with integral return spring. 4,271,342, Cl. 200-157.000.

Skalatsky, Viktor K.: *See—*
Glushko, Mikhail F.; Skalatsky, Viktor K.; Zakhryamin, Anatoly D.; and Shamrai, Gennady F., 4,270,341, Cl. 57-215.000.

Skellings, Edmund. Color language teaching method and display and process for creating the display. 4,270,284, Cl. 434-156.000.

SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; and Kunkel, Heinrich, 4,270,815, Cl. 308-213.000.

Skinner, Robert T. J., to Lucas Industries Limited. Fife couplings. 4,270,886, Cl. 417-462.000.

Skol Brouwerijen N.V.: *See—*
van Lieshout, Marinus W., 4,270,584, Cl. 141-11.000.

Skura, Martin C. Metal working tool. 4,270,276, Cl. 33-189.000.

Slovenkai, Stephen V.: *See—*
Kelley, Donald J.; Williams, David J.; and Slovenkai, Stephen V., 4,271,281, Cl. 526-80.000.

Smid, Joost: *See—*
Luijten, Waltherus J. Th. H.; and Smid, Joost, 4,270,882, Cl. 415-72.000.

Smirnov, Anatoly V.: *See—*
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.

Smith, Anthony J., to Racal Automation Limited. Automatic testing of electrical circuitry. 4,271,516, Cl. 371-25.000.

Smith, Donald W.: *See—*
Swisher, George W., Jr.; Smith, Donald W.; and Teel, Larry W., 4,270,801, Cl. 299-1.000.

Smith, Gary W., to Sifco Industries, Inc. Method for soldering aluminum. 4,270,986, Cl. 204-48.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,271,169, Cl. 424-263.000.

Smith, Paul: *See—*
Warner, Percival E.; Smith, Paul; and Cadle, Terence M., 4,271,239, Cl. 428-547.000.

Smith, Robert L. Roving brake. 4,270,686, Cl. 226-195.000.

Smith, Tony S.: *See—*
Braithwaite, Albert A.; and Smith, Tony S., 4,271,238, Cl. 428-542.000.

Societe Anonyme Francaise Du Ferodo: *See—*
Beccaris, Carlo, 4,270,645, Cl. 192-106.100.
Billet, Rene, 4,270,644, Cl. 192-106.200.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Stenne, Pierre, 4,271,201, Cl. 426-40.000.

Societe de Diffusion NEIMAN: *See—*
Neiman, Michel, 4,270,667, Cl. 220-86.00R.

Sofer, Nancy C. Flush-fitting toy building blocks. 4,270,304, Cl. 46-28.000.

Sohreyer, Gerd: *See—*
Hentschel, Klaus; Bittner, Friedrich; and Sohreyer, Gerd, 4,271,298, Cl. 544-190.000.

Solartron Electronic Group Limited, The: *See—*
Outram, Stephen H.; and Luckhurst, Geoffrey A., 4,271,392, Cl. 324-115.000.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Khantimirov, Sergei S.; and Shirokov, Alexandr A., 4,271,367, Cl. 310-13.000.

Someya, Sinzo: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,270,948, Cl. 71-100.000.

Sonoco Products Company: *See—*
Fletcher, Wade D.; McMahon, Edward H.; and Grady, Dwight D., 4,270,475, Cl. 113-120.00K.

Sonoda, Hiromu: *See—*
Sugihara, Taizo; and Sonoda, Hiromu, 4,270,962, Cl. 156-180.000.

Sony Corporation: *See—*
Suzuki, Tadahiko; Miyasaka, Tomoaki; and Amano, Toshio, 4,271,432, Cl. 358-190.000.
Tanimura, Ken; and Onodera, Toshio, 4,271,463, Cl. 363-126.000.

Sorensen, Ronald L.; and Whitfield, Dwight, to Lake Center Industries. Door lock actuator. 4,270,783, Cl. 292-336.300.

Souhrada, Frank; and Galvez, Buenaventura B., to Gulf Canada Limited. Method and apparatus for the prevention of solids deposits in a tubular reactor by pulsed flow. 4,271,007, Cl. 208-48.00R.

Southard, James S.; and Bean, Eric R., to Kimball International, Inc. Glide circuit for electronic musical instrument. 4,270,431, Cl. 84-1.240.

Spademan, Richard G. Step-in ski binding. 4,270,770, Cl. 280-624.000.

Span Instruments, Inc.: *See—*
Gray, Tommy L., 4,270,568, Cl. 137-498.000.

Spanswick, James: *See—*
Knickmeyer, William W.; Spanswick, James; and Stephens, James R., 4,271,311, Cl. 560-86.000.

Spasojevic, Ratko. Mobile vending booth. 4,270,319, Cl. 52-36.000.

Spector, Dov; and Spector, Yechiel. Fire and explosion detection and suppression system. 4,270,613, Cl. 169-61.000.

Spector, George: *See—*
Morales, Juan C.; and Spector, George, 4,270,526, Cl. 128-67.000.

Spector, Marshall L.: *See—*
Chen, Michael S.; Greskovich, Eugene J.; and Spector, Marshall L., 4,271,026, Cl. 210-605.000.

Spector, Yechiel: *See—*
Spector, Dov; and Spector, Yechiel, 4,270,613, Cl. 169-61.000.

Speedfam Corporation: *See—*
Cesna, Joseph V., 4,270,314, Cl. 51-131.400.

Speeter, Winfried, to Siemens Aktiengesellschaft. Non-dispersive infrared gas analyzer for testing gases containing water-vapor. 4,271,124, Cl. 422-68.000.

Spencer, Patricia J.; DeRoeck, Carrie P.; and DeRoeck, Robert L. Flour sifter. 4,271,011, Cl. 209-236.000.

Spener, Gerhard: *See—*
Hrovat, Milan; and Spener, Gerhard, 4,271,101, Cl. 264-0.500.

Sperry Corporation: *See—*
Halls, Lawrence M., 4,270,338, Cl. 56-14.400.
Hewitt, Frederick G., 4,270,862, Cl. 356-5.000.

Spin-O-Magic, Inc.: *See—*
Baucom, Joe B.; and Donnelly, James E., 4,270,340, Cl. 57-75.000.

Spisak, Edward G. Wheel and hub cap assembly. 4,270,805, Cl. 301-37.0TP.

Spooner, Leonard: *See—*
Vink, Walter; Spooner, Leonard; and Mackay, Donald A. M., 4,270,956, Cl. 127-29.000.

Spranger, Roy C.: *See—*
Mathieson, John N.; and Spranger, Roy C., 4,270,792, Cl. 296-93.000.

Square D Company: *See—*
Carroll, James C.; Chapman, Donald L.; and McGoldrick, Gilbert A., 4,270,318, Cl. 52-1.000.

Stahl, Peter: *See—*
Deneke, Ulfert; Stahl, Peter; and Schneider, Walter, 4,271,265, Cl. 435-16.000.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Arndts, Dietrich; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, to Boehringer Ingelheim GmbH. Method of using 2-[N-(2,6-dichloro-phenyl)-N-allyl-amino]-2-imidazoline and salts thereof as bradycardiacs. 4,271,175, Cl. 424-273.00R.

Standard Oil Company: *See—*
Grasselli, Robert K.; and Suresh, Dev D., 4,271,091, Cl. 564-305.000.
Pesa, Frederick A.; and Haase, Thomas A., 4,271,038, Cl. 252-428.000.

Standard Oil Company (Indiana): *See—*
Knickmeyer, William W.; Spanswick, James; and Stephens, James R., 4,271,311, Cl. 560-86.000.
Zimmerschied, Wilford J.; and Meyer, Delbert H., 4,271,312, Cl. 560-93.000.

Stanfield, John N.: *See—*
Noensie, Nick; Stanfield, John N.; and Pettersen, Paal, 4,270,775, Cl. 285-24.000.

Stanley Electric Co., Ltd.: *See—*
Teshima, Toru; Nishizawa, Jun-ichi; and Kishi, Yasunori, 4,271,408, Cl. 340-702.000.

Star Paper Tube, Inc.: *See—*
McSwiney, Thomas L.; Bomar, George S.; and Johnson, Oran W., 4,270,443, Cl. 493-287.000.

Star Systems, Inc.: *See—*
Steber, George R., 4,271,431, Cl. 358-140.000.

Stark, Virgil, to North American Utility Construction Corp. Solar distillation apparatus. 4,270,981, Cl. 202-172.000.

Stark, William A.: *See—*
Blackburn, Wayne E.; Liston, Max D.; and Stark, William A., 4,270,564, Cl. 137-240.000.

Statz, Robert J.; and Doty, James K., to Du Pont de Nemours, E. I., and Company. Catalyst and dehydrogenation process. 4,271,039, Cl. 252-435.000.

Staudacher, Frank: *See—*
Stemme, Otto; Staudacher, Frank; Lermann, Peter; and Wagensonner, Eduard, 4,270,854, Cl. 354-76.000.

Stauffer Chemical Company: *See—*
Gutman, Arnold D., 4,270,946, Cl. 71-94.000.
Gutman, Arnold D., 4,270,947, Cl. 71-98.000.
Pitt, Harold M., 4,271,325, Cl. 570-228.000.

Steber, George R., to Star Systems, Inc. Scan converter utilizing discrete differentially coded signals. 4,271,431, Cl. 358-140.000.

Steffen, Dale A.; Sturm, Ronald E.; and Rinard, George A., to University Patents, Inc. Vital signs monitoring system. 4,270,547, Cl. 128-671.000.

Steigerwald, Wolf-Erhard; Ambros, Peter; and Geyer, Hermann. Electrically conductive layer and method for its production. 4,271,045, Cl. 252-511.000.

Stemme, Otto; Staudacher, Frank; Lermann, Peter; and Wagensonner, Eduard, to AGFA-Gevaert, A.G. Photographic instant camera with magnetic recording capability. 4,270,854, Cl. 354-76.000.

Stendel, Wilhelm: *See—*
Forster, Heinz; Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,271,186, Cl. 424-304.000.

Stengle, Edward J., to Owens-Illinois, Inc. Method of coating hot glass contacting surfaces. 4,271,212, Cl. 427-203.000.

Stenne, Pierre, to Societe d'Assistance Technique pour Produits Nestle S.A. Manufacture of cheeses. 4,271,201, Cl. 426-40.000.

Stenz, Paul P.: *See—*
Kordt, Hans-Herbert; and Stenz, Paul P., 4,270,835, Cl. 339-198.0GA.

Stenzel, Kurt H.: *See—*
Miyata, Teruo; Rubin, Albert L.; and Stenzel, Kurt H., 4,271,070, Cl. 260-123.700.

Stephens, James R.: *See—*
Knickmeyer, William W.; Spanswick, James; and Stephens, James R., 4,271,311, Cl. 560-86.000.

Stephens, Richard B., to Exxon Research and Engineering Company. Fluid optical switch for a solar collector. 4,270,517, Cl. 126-422.000.

Stepina, Jaroslav: *See—*
Bradler, Peter; and Stepina, Jaroslav, 4,271,380, Cl. 318-245.000.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Opalka, Chester J., Jr., 4,271,168, Cl. 424-263.000.

Stern, Eric W.: *See—*
Amundsen, Alan R.; and Stern, Eric W., 4,271,085, Cl. 260-429.00R.

Stern, Harold J.: *See—*
Perovetz, Lawrence M.; and Stern, Harold J., 4,270,932, Cl. 51-293.000.

Steven Baggeren V.V.: *See—*
Post, Adrianus J., 4,270,877, Cl. 405-198.000.

Steven Manufacturing Company: *See—*
Klawitter, Ronald R., 4,270,306, Cl. 46-248.000.

Stevens, Albert: *See—*
McMullan, James P.; and Stevens, Albert, 4,270,820, Cl. 312-242.000.

Stewart, David B.; Stewart, William R.; and Dickinson, John M. C., to Wm. R. Stewart & Sons (Hacklemakers) Ltd. Lag or stave assembly for Kirschner beaters. 4,270,245, Cl. 19-85.000.

Stewart, Lloyd W.: *See—*
Xanthopoulos, Piritheos G.; and Stewart, Lloyd W., 4,270,303, Cl. 46-25.000.

Stewart, William R.: *See—*
Kastura, John L.; and Stewart, William R., 4,271,402, Cl. 340-52.00F.
Stewart, David B.; Stewart, William R.; and Dickinson, John M. C., 4,270,245, Cl. 19-85.000.

Stichting Bouwcentrum: *See—*
van Heel, Joannes M., 4,270,523, Cl. 126-435.000.

Stiles, John C.; and Elbert, Hubert F., to Singer Company, The. Nonreciprocal phase shifter for a ring laser gyro. 4,271,397, Cl. 331-94.50C.

Stillwagon, Roy E., to United States of America, Energy. Homopolar machine for reversible energy storage and transfer systems. 4,271,369, Cl. 310-178.000.

Stockwell, Dean A.: *See—*
Cheselka, Harry; Nemecek, William F.; and Stockwell, Dean A., 4,271,479, Cl. 364-900.000.

Stone, Leonard R.; Aron, Steven J., Jr.; and Kemmerling, Robert A., to Republic Steel Corporation. Method and apparatus for detecting a distant object using gamma radiation. 4,271,362, Cl. 250-496.000.

Storage Technology Corporation: *See—*
Hall, James B., 4,271,519, Cl. 371-38.000.

Storck, Glenn E., to Thomas & Betts Corporation. Reinforced electrical connector junction means. 4,270,833, Cl. 339-121.000.

Stork, Gilbert: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,271,324, Cl. 568-824.000.

Stout Industries, Inc.: *See—*
Eckberg, Keith S., II, 4,270,292, Cl. 40-611.000.

Stover, Carole S.; Compton, Leslie E.; and Youngerman, Eugene G., to Occidental Research Corporation. Method for reducing the nitrogen content of shale oil. 4,271,009, Cl. 208-254.00R.

Straight, Larry A. Portable wire puller. 4,270,734, Cl. 254-134.30R.

Strammello, Peter, Jr., to Zenith Radio Corporation. Tunable resonant circuits for a multi-band VHF/UHF/CATV tuner. 4,271,529, Cl. 455-180.000.

Strandas, Lars O.: *See—*
Beijer, Per A. O.; and Strandas, Lars O., 4,270,412, Cl. 74-801.000.

Strassle, Rudolf; and Zaugg, Hans, to Hoffmann-La Roche Inc. Control plasma. 4,271,122, Cl. 422-61.000.

Strelow, Edgar. Reverser apparatus for tennis rackets. 4,270,752, Cl. 273-73.00A.

Strickler, Rainer: *See—*
Oppenlaender, Knut; Strickler, Rainer; Perner, Johannes; and Trieselt, Wolfgang, 4,271,031, Cl. 252-156.000.

Strickman, Melvyn B.: *See—*
Strickman, Robert L.; and Strickman, Melvyn B., 4,271,272, Cl. 521-110.000.

Strickman, Robert L.; and Strickman, Melvyn B. Polyurethane sponges manufactured with additive dispersed therein. 4,271,272, Cl. 521-110.000.

Strohschneider, Heinz F., to Dymo Industries Inc. Bidirectional imprinter. 4,270,453, Cl. 101-269.000.

Struessel, David A., to United States of America, Navy. Self-restricting shutoff valve. 4,270,566, Cl. 137-492.500.

Stubbings, James H., to Potomac Applied Mechanics, Inc. Apparatus for bundling and banding a stack of objects. 4,270,445, Cl. 100-4.000.

Sturm, Ronald E.: *See—*
Steffen, Dale A.; Sturm, Ronald E.; and Rinard, George A., 4,270,547, Cl. 128-671.000.

Sturman, Oded E.; and Grill, Benjamin, to Hydronic Systems, Inc. Controller for fluid flow systems. 4,270,573, Cl. 137-624.200.

Stutz Motor Car of America, Inc.: *See—*
Curotto, Richard L., 4,270,790, Cl. 296-37.160.

Sudakov, Jury I.: *See—*
Ljubimov, Boris A.; Chervyakov, Evgeny N.; Sudakov, Jury I.; Pogorelova, Iraida S.; Pritsker, Petr Y.; Kandrusev, Igor I.; and Liberfarb, Zilek B., 4,270,349, Cl. 60-384.000.

Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft: *See—*
Aignesberger, Alois; Lukas, Walter; and Weinberg, Ekkehard, 4,270,954, Cl. 106-47.00R.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Nonnenmann, Manfred; and Hummel, Werner, 4,270,641, Cl. 192-82.00T.

Suderman, Donald A.: *See—*
Johnston, David K.; and Suderman, Donald A., 4,270,551, Cl. 130-27.00H.

Sugihara, Taizo; and Sonoda, Hiromu, to Chisso Corporation. Process and apparatus for the preparation of bar form fibrous molding. 4,270,962, Cl. 156-180.000.

Sugimoto, Kenichi: *See—*
Asano, Makoto; Kawashima, Saburo; Sugimoto, Kenichi; and Kobayashi, Tadashi, 4,271,059, Cl. 260-31.20T.

Sugiura, Muneharu: *See—*
Minoura, Kazuo; Sugiura, Muneharu; Minami, Setsuo; and Sato, Tadashi, 4,270,858, Cl. 355-8.000.

Sugiura, Takeo: *See—*
Ito, Yoshiyashu; Sugiura, Takeo; and Sawada, Yoshikatsu, 4,270,449, Cl. 101-129.000.

Sugiyama, Akira: *See—*
Minohara, Kiyomi; Sugiyama, Akira; Nakai, Hiroshi; Iida, Masajiro; Morimatsu, Hideharu; and Kobayashi, Yuzo, 4,271,490, Cl. 367-122.000.

Sugiyama, Masahiko: *See—*
Ishii, Shinya; Saito, Takaharu; Sugiyama, Masahiko; and Kamo, Takashi, 4,270,691, Cl. 228-194.000.

Suh, Sang K.; and Hall, Daniel W., to Ford Motor Company. Sintering of coated briquette. 4,270,951, Cl. 75-200.000.

Suhara, Manabu; Goto, Shoziro; and Arai, Kiyotaka, to Asahi Glass Company, Ltd. Cation exchange membrane of fluorinated polymer for electrolysis and electrolysis using the membrane. 4,270,996, Cl. 204-98.000.

Sullivan, Robert G.: *See—*
Eklund, James D.; Halter, Joseph M.; Rasmussen, Donald E.; Sullivan, Robert G.; and Moffat, Robert B., 4,270,876, Cl. 405-133.000.

Sullivan, Thomas J., to Fisons Limited. Method of treating atopic eczema. 4,271,182, Cl. 424-283.000.

Sullivan, William E.; Meetze, O. Murray, Jr.; and Seager, Richard H., to Risdon Enterprises, Inc. Apparatus for inducing air flow past a product capable of being vaporized. 4,271,092, Cl. 261-30.000.
Sulzer, Ernst. Picture frames. 4,270,288, Cl. 40-156.000.
Sumitomo Chemical Company, Limited: *See*—
Tomura, Yasushi; Sakuma, Fujio; Suzuki, Seiji; and Shimizu, Masayuki, 4,271,280, Cl. 526-65.000.
Yamaguchi, Takashi; Shinjo, Goro; and Okuno, Yoshitoshi, 4,271,180, Cl. 424-274.000.
Sumitomo Electric Industries, Ltd.: *See*—
Uchida, Naoya; Seikai, Shigeyuki; Yoshimura, Kozo; and Yamanishi, Toru, 4,270,840, Cl. 350-96.340.
Sumitomo Metal Industries Limited: *See*—
Shiraiwa, Toshio; Yamaguchi, Hisao; Matsumoto, Shigeaki; Tomabechi, Masatoshi; and Nakajima, Kimio, 4,270,389, Cl. 73-612.000.
Sumitomo Naugatuck Co., Ltd.: *See*—
Sakano, Hajime; Nakai, Fumio; and Tomari, Yukio, 4,271,230, Cl. 428-315.000.
Sumitomo Precision Products Co. Ltd.: *See*—
Nakamura, Masakazu, 4,270,604, Cl. 165-185.000.
Sun, Jui-Yuan: *See*—
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Baillie, Lloyd A., 4,270,926, Cl. 44-1.0SR.
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Troncoso, Nestor J., 4,270,927, Cl. 44-1.0SR.
Sun Sports Yohin Co., Ltd.: *See*—
Ehama, Goro, 4,270,511, Cl. 124-81.000.
Sunbeam Corporation: *See*—
Crowley, George C., 4,271,350, Cl. 219-549.000.
Sunohara, Yoshio; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Lock-up control system for a torque converter including a timing arrangement. 4,270,636, Cl. 192-3.310.
Suntech, Inc.: *See*—
Butte, Walter A., Jr.; and Cherry, Wesley R., 4,271,088, Cl. 260-465.600.
Butte, Walter A., Jr.; and Cherry, Wesley R., 4,271,089, Cl. 260-465.600.
Sunworks, Inc.: *See*—
Hopper, Thomas P.; and Barber, Everett M., Jr., 4,270,516, Cl. 126-417.000.
Supp, Emil; Jockel, Heinz; Cornelius, Gerhard; and Marschner, Friedmann, to Metallgesellschaft Aktiengesellschaft. Production of methanol. 4,271,086, Cl. 518-704.000.
Suresh, Dev D.: *See*—
Grasselli, Robert K.; and Suresh, Dev D., 4,271,091, Cl. 564-305.000.
Susquehanna Broadcasting Company: *See*—
Beckman, Glenn B., 4,270,666, Cl. 215-364.000.
Sutton Laboratories, Inc.: *See*—
Berke, Philip A.; and Rosen, William E., 4,271,176, Cl. 424-273.00R.
Suzuki, Hideto; Hayashi, Shunichi; and Yoshioka, Takahiro, to Nitto Electric Industrial Co., Ltd. Epoxy resin compositions for sealing semiconductors. 4,271,061, Cl. 260-37.0EP.
Suzuki, Hiroshi: *See*—
Nakane, Masanori; Osumi, Yasuaki; Suzuki, Hiroshi; and Kato, Aakihiko, 4,270,360, Cl. 62-48.000.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, to Sharp Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Indication arrangement for use in a sewing machine. 4,270,472, Cl. 112-158.00E.
Suzuki, Ryoichi; Harigaya, Isao; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Sound device incorporated camera. 4,270,852, Cl. 354-23.00D.
Suzuki, Seiji: *See*—
Tomura, Yasushi; Sakuma, Fujio; Suzuki, Seiji; and Shimizu, Masayuki, 4,271,280, Cl. 526-65.000.
Suzuki, Tadahiko; Miyasaka, Tomoaki; and Amano, Toshio, to Sony Corporation. Power supply control apparatus for a television receiver. 4,271,432, Cl. 358-190.000.
Suzuki, Takao: *See*—
Mizuno, Shogo; Suzuki, Takao; Kawasaki, Sadanobu; and Takeda, Hideichiro, 4,271,224, Cl. 428-207.000.
Suzuki, Yoshiaki: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,271,252, Cl. 430-216.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,271,253, Cl. 430-216.000.
Suzuki, Yuichi; and Sano, Ichiro, to Furukawa Denchi Kabushiki Kaisha; and Furukawa Denki Kogyo Kabushiki Kaisha. Grid base plate for an electrode plate for a storage battery and method of manufacture thereof. 4,271,245, Cl. 429-243.000.
Svenson, Hardy C., to United States of America, Treasury. Method and apparatus for accelerating chemical reactions using a spread beam deflector with single or multiple reflectors. 4,271,347, Cl. 219-121.00L.
Swigert, David L.: *See*—
Kehrman, Robert F.; Farstad, Arnold J.; Gibbons, Michael G.; and Swigert, David L., 4,271,407, Cl. 340-690.000.
Swisher, George W., Jr.; Smith, Donald W.; and Teel, Larry W., to CMI Corporation. Steering and cutter drum positioning in a paved roadway planing machine. 4,270,801, Cl. 299-1.000.
Syntex Inc.: *See*—
Nash, John E., 4,270,903, Cl. 433-165.000.
Szanto, Elmer G.; and Ulrich, Charles J., to Velo-Bind, Inc. Punching and binding machine. 4,270,970, Cl. 156-477.00B.
Szarka, David D.: *See*—
Hendrickson, James D.; White, Pat M.; Davis, Odie R. S.; Workman, Nolan M.; Baker, Eugene E.; and Szarka, David D., 4,270,608, Cl. 166-278.000.
T. Sendzimir, Inc.: *See*—
Verbickas, Robert C.; and Turley, John W., 4,270,377, Cl. 72-242.000.
Tabuchi, Katsuhiko; Kato, Toshiaki; and Namba, Kenryo, to TDK Electronics Co., Ltd. Silver-silver chloride electrode. 4,270,543, Cl. 128-639.000.
Takahashi, Naoyuki; and Kadota, Toshihiko, to Olympus Optical Co., Ltd. Pantograph mechanism. 4,270,723, Cl. 248-421.000.
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha Ltd. Herbicidal compound, herbicidal composition containing the same, and method of use thereof. 4,270,948, Cl. 71-100.000.
Takahashi, Toru, to Yamaichi Electric Mfg. Co., Ltd. Electric terminal for press-in connection with conductors. 4,270,831, Cl. 339-99.00R.
Takamizawa, Minoru: *See*—
Cho, Kenji; Takamizawa, Minoru; and Inoue, Yoshio, 4,271,255, Cl. 430-253.000.
Takara Co., Ltd.: *See*—
Arigaya, Fujio, 4,270,307, Cl. 46-254.000.
Takashi, Iwata, to TDK Electronics Co., Ltd. Detector for doppler device. 4,271,411, Cl. 343-5.0DD.
Takayama, Akira, to Alps Electric Co., Ltd. Microwave receiver. 4,271,534, Cl. 455-270.000.
Takayama, Yoshihiro: *See*—
Yukawa, Hideaki; Osumi, Kazuoki; Nara, Terukatsu; and Takayama, Yoshihiro, 4,271,267, Cl. 435-108.000.
Takazawa, Yuzuru; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Automatic film sensitivity setting system for camera. 4,270,851, Cl. 354-21.000.
Takeda Chemical Industries, Ltd.: *See*—
Kondo, Koichi; Yoshida, Isamu; and Kobayashi, Takashi, 4,270,923, Cl. 23-230.00B.
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,271,083, Cl. 260-396.00R.
Takeda, Hideichiro: *See*—
Mizuno, Shogo; Suzuki, Takao; Kawasaki, Sadanobu; and Takeda, Hideichiro, 4,271,224, Cl. 428-207.000.
Takeda, Kenjiro: *See*—
Takeda, Masahiro; and Takeda, Kenjiro, 4,270,576, Cl. 137-888.000.
Takeda, Masahiro; and Takeda, Kenjiro. Self-contained fluid jet-mixing apparatus and method therefor. 4,270,576, Cl. 137-888.000.
Takemoto, Takeshi: *See*—
Isayama, Takuro; Takemoto, Takeshi; Sato, Tsutomu; and Fukazawa, Takao, 4,271,366, Cl. 307-591.000.
Takenouchi, Mutsuo; Tomiyama, Shunsuke; and Ozawa, Takashi, to Fuji Xerox Co., Ltd. Scanning type readout device. 4,271,435, Cl. 358-213.000.
Takeuchi, Kazumasa: *See*—
Takizawa, Toshiaki; Takeuchi, Kazumasa; and Togo, Takashi, 4,270,845, Cl. 350-299.000.
Taki, Naoko: *See*—
Saito, Tomoo; Nishiyama, Yumiko; Watanabe, Kazuo; Taki, Naoko; and Morikawa, Naotake, 4,271,035, Cl. 252-301.170.
Takizawa, Toshiaki; Takeuchi, Kazumasa; and Togo, Takashi, to Mochida Pharmaceutical Co., Ltd. Laser apparatus for operations. 4,270,845, Cl. 350-299.000.
Talbott, Gene B. Manually propelled apparatus for use in transplanting crops. 4,270,471, Cl. 111-6.000.
Talwar, Gursaran P.: *See*—
Tsong, Yun-Yen; Talwar, Gursaran P.; Koide, Samuel; and Segal, Sheldon J., 4,271,069, Cl. 260-112.50R.
Tamaru, Munetaka; and Hatuse, Toshikazu, to Citizen Watch Co., Ltd. Electronic timepiece. 4,271,493, Cl. 368-28.000.
Tamura Kaken Co., Ltd.: *See*—
Watariguchi, Kiyosumi, 4,271,258, Cl. 430-284.000.
Tamura, Masuhiko: *See*—
Tokitoh, Yasuo; Yoshimura, Noriaki; and Tamura, Masuhiko, 4,271,320, Cl. 568-426.000.
Tanabe, Shigeru. Pin plug. 4,270,832, Cl. 339-105.000.
Tanaka, Itsuya; and Fujii, Toshikazu, to Sanyo Chemical Industries, Ltd. Process for producing polyurethane resins and sheet materials. 4,271,217, Cl. 428-96.000.
Tanaka, Kenji: *See*—
Fukuba, Akio; Morishita, Michio; Tanaka, Kenji; Nishi, Toshinobu; and Ouchi, Hideaki, 4,270,347, Cl. 60-276.000.
Tanaka, Shinichi, to Sharp Kabushiki Kaisha. Power supply controller in a keyboard-equipped apparatus such as an electronic calculator. 4,271,404, Cl. 340-365.00S.
Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. Phenyl beta-chloro-alpha-hydroxy-beta-(3-trifluoromethylphenyl)ethyl ketone and process for its production. 4,271,319, Cl. 568-312.000.
Tanimura, Ken; and Onodera, Toshio, to Sony Corporation. High voltage transformer. 4,271,463, Cl. 363-126.000.
Tann, Robert L. Expansible enclosure. 4,270,791, Cl. 296-171.000.
Tanouchi, Tadao; Kawamura, Masanori; and Hayashi, Masaki, to Ono Pharmaceutical Co., Ltd.,; and Kissei Pharmaceutical Co., Ltd. Pyridine derivatives. 4,271,170, Cl. 424-263.000.
Tarantino, Anna: *See*—
Eastes, Walter L.; and Tarantino, Anna, 4,270,944, Cl. 65-27.000.

Tatano, Toshio: *See—*
Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; Hayashi, Atsuko, heir; Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, 4,271,310, Cl. 560-71.000.

Tatham, Walter A.: *See—*
Brown, Carlton E.; and Tatham, Walter A., 4,270,577, Cl. 138-39.000.

TDK Electronics Co., Ltd.: *See—*
Mikame, Yoshio, 4,271,442, Cl. 360-131.000.
Tabuchi, Katsuhiko; Kato, Toshiaki; and Namba, Kenryo, 4,270,543, Cl. 128-639.000.
Takashi, Iwata, 4,271,411, Cl. 343-5.0DD.

Te Ka De, Felten & Guilleaume, Fernmeldeanlagen GmbH: *See—*
Parras, Karlheinz; Bader, Edgar; and Dupont, Helmut, 4,271,514, Cl. 371-22.000.

Techtransfer GmbH: *See—*
Roediger, Hanns E., 4,270,279, Cl. 34-9.000.

Tecnodial, S.P.A.: *See—*
Giovannetti, Sergio; Barsotti, Giuliano; and Donati, Giovanni, 4,271,023, Cl. 210-321.300.

Teel, Larry W.: *See—*
Swisher, George W., Jr.; Smith, Donald W.; and Teel, Larry W., 4,270,801, Cl. 299-1.000.

Teijin Limited: *See—*
Mitsuishi, Yukio; Shiozaki, Shigeru; and Hasegawa, Kinji, 4,270,308, Cl. 47-17.000.

Tektronix, Inc.: *See—*
Dagostino, Thomas P.; and Navarro, Luis J., 4,271,486, Cl. 365-45.000.
Saxe, Charles L., 4,271,488, Cl. 365-230.000.

Teledyne, Inc.: *See—*
Hawk, Charles E.; and Livingston, Danny K., 4,270,386, Cl. 73-204.000.

Telle, Helmut: *See—*
Brinkmann, Uwe; Telle, Helmut; and Raue, Roderich, 4,271,395, Cl. 331-94.50L.

Teller, Aaron J., to Teller Environmental Systems, Inc. Treatment of effluent gases from the manufacture of fertilizer. 4,271,134, Cl. 423-238.000.

Teller Environmental Systems, Inc.: *See—*
Teller, Aaron J., 4,271,134, Cl. 423-238.000.

Tellert, Rudy, to Sachs-Systemtechnik GmbH. Ignition control for better gear shifting in an automotive vehicle. 4,270,414, Cl. 74-852.000.

Tellis, Cyril, to Union Carbide Corporation. Process for removing hydrogen cyanide from gaseous streams. 4,271,133, Cl. 423-230.000.

Temple, Chester S., to PPG Industries, Inc. Sizing composition to yield sized glass fibers with improved UV stability. 4,271,229, Cl. 428-288.000.

Templeton, William B., to Burroughs Corporation. Document packing system. 4,270,747, Cl. 271-179.000.

Tenneco Chemicals, Inc.: *See—*
Feldman, Martin L.; and De Groff, James T., 4,271,065, Cl. 260-40.00R.

Tennison, Stephen R., to British Petroleum Company Limited, The. Process for the production of ammonia. 4,271,136, Cl. 423-362.000.

Terashima, Isamu; Twubaki, Toshio; and Anzai, Masayasu, to Hitachi, Ltd. Developer regulating device in developing apparatus. 4,270,487, Cl. 118-690.000.

Terui, Yasuaki: *See—*
Chikamura, Takao; Ogawa, Kazufumi; Terui, Yasuaki; Fujiwara, Shinji; and Fukai, Masakazu, 4,271,420, Cl. 357-30.000.

Terzian, Berj A. Quadri-balanced digital time displays. 4,271,497, Cl. 368-82.000.

Teshima, Toru; Nishizawa, Jun-ichi; and Kishi, Yasunori, to Stanley Electric Co., Ltd. Colored-light emitting display. 4,271,408, Cl. 340-702.000.

Tesoro, Joseph. Two-way ratchet wrench. 4,270,417, Cl. 81-62.000.

Teulon, Jean M., to Hexachimie. Indane-acetic acid aminoesters, their preparation and their use in therapy. 4,271,161, Cl. 424-250.000.

Texaco Inc.: *See—*
Cardenas, Ricardo L.; Harnsberger, Bobby G.; and Maddox, Jim, Jr., 4,270,607, Cl. 166-273.000.
Kolaian, Jack H.; and Love, Richard F., 4,271,032, Cl. 252-174.190.

Texas Instruments Incorporated: *See—*
Gilden, Sheldon J.; and Robichaud, Robert H., 4,270,544, Cl. 128-640.000.
Hornbeck, Larry J., 4,271,419, Cl. 357-24.000.
Johnson, Elwin L.; Kilby, Jack S.; Lathrop, Jay W.; McFerren, John S.; and Myers, David J., 4,270,263, Cl. 29-590.000.
Kang, S. Daniel, 4,271,423, Cl. 357-55.000.
McElroy, David J., 4,271,421, Cl. 357-41.000.

Textron, Inc.: *See—*
Cresap, Wesley L.; and Myers, Alan W., 4,270,711, Cl. 244-17.170.
Dickinson, Thorn W.; McLarty, Daniel R.; and Lyons, Thomas F., Jr., 4,270,415, Cl. 74-867.000.

Tezuka, Chikao; and Mikoshiba, Hitoshi, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Printing device. 4,270,448, Cl. 101-99.000.

Th. Goldschmidt AG: *See—*
Bertelmann, Gunter; Holtschmidt, Ulrich; and Laqua, Arnold, 4,271,190, Cl. 424-316.000.

Thaler, Heinrich: *See—*
Honkanen, Erkki J.; Pippuri, Aino K.; Kairisalo, Pekka J.; Thaler, Heinrich; Koivisto, Maija K.; and Tuomi, Sirpa A., 4,271,300, Cl. 544-291.000.

Tharman, Paul A., to Briggs & Stratton Corporation. Breakerless ignition system. 4,270,509, Cl. 123-647.000.

Theriault, Gerald E., to RCA Corporation. SAW Filter preamplifier. 4,271,433, Cl. 358-191.100.

Thesman, Dana F.: *See—*
Feldman, Robert I.; and Thesman, Dana F., 4,270,271, Cl. 30-276.000.

Theurer, Josef; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Mobile apparatus for receiving and laying an assembled track section. 4,270,456, Cl. 104-3.000.

Thexton Manufacturing Company: *See—*
Norcross, Paul D., 4,270,646, Cl. 192-111.00A.
Tichy, Brian N.; and Clark, Robert E., 4,270,259, Cl. 29-402.060.

Think, Inc.: *See—*
Gaetano, Ralph R., 4,270,773, Cl. 283-34.000.

Thomas, Alfred W.; and Danne, Ulrich W., to Girling Limited. Servo boosters for vehicle brake systems. 4,270,353, Cl. 60-547.00R.

Thomas, Alfred W.; and Op den Camp, Lutz E. A., to Lucas Industries Limited. Servo boosters for vehicle braking systems. 4,270,438, Cl. 91-49.000.

Thomas & Betts Corporation: *See—*
Narozny, Ronald S., 4,270,826, Cl. 339-75.0MP.
Storck, Glenn E., 4,270,833, Cl. 339-121.000.
Wilson, Albert H., 4,270,829, Cl. 339-96.000.

Thomas, John C. Arm and leg powered drive system for a vehicle. 4,270,766, Cl. 280-234.000.

Thomas, Lon G. Lost personal accessory return method and article. 4,271,352, Cl. 235-375.000.

Thomas, Robert D. Drill bit bearing. 4,270,812, Cl. 308-8.200.

Thompson, David K., to Jermed Limited. Scalpel blade extractor. 4,270,416, Cl. 81-3.00R.

Thompson, James: *See—*
Wenghoefer, Johann; Messier, Dennis; and Thompson, James, 4,271,072, Cl. 260-207.300.

Thomson-CSF: *See—*
Croset, Michel; and Velasco, Gonzalo, 4,271,000, Cl. 204-195.00S.
Eumurian, Gregoire; and Levan, Jean-Pol, 4,271,503, Cl. 370-74.000.
Van Den Driessche, Michel, 4,271,427, Cl. 358-40.000.

Thurston, George T., to General Electric Company. Improved capacitor lead clips. 4,270,828, Cl. 339-95.00R.

Thyes, Marco; Gries, Josef; Lehmann, Hans D.; Lenke, Dieter; and Kunze, Johannes, to BASF Aktiengesellschaft. Novel 3,4-diaza-bicyclo[4.1.0]hept-2-en-5-ones, their preparation, and therapeutic agents containing these compounds. 4,271,163, Cl. 424-250.000.

Tice, William A. Dual position needle positioner for stitching machines. 4,270,474, Cl. 112-276.000.

Tichy, Brian N.; and Clark, Robert E., to Thexton Manufacturing Company. Method and apparatus for rebuilding advance weights. 4,270,259, Cl. 29-402.060.

Tikhonova, Ljudmila A.: *See—*
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.

Tivoli Industries, Inc.: *See—*
George, Benjamin B., Jr., 4,271,458, Cl. 362-236.000.

Tobin, Thomas J.: *See—*
Meister, Otto; and Tobin, Thomas J., 4,271,339, Cl. 200-144.00C.

Togo, Takashi: *See—*
Takizawa, Toshiaki; Takeuchi, Kazumasa; and Togo, Takashi, 4,270,845, Cl. 350-299.000.

Tokico Ltd.: *See—*
Koshimizu, Naganori, 4,270,354, Cl. 60-581.000.

Tokitoh, Yasuo; Yoshimura, Noriaki; and Tamura, Masuhiko, to Kuraray Co., Ltd. Process for producing a higher carbonyl compound. 4,271,320, Cl. 568-426.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Mukai, Kuniaki; and Hyodo, Kouichi, 4,271,387, Cl. 323-241.000.
Oonishi, Toshiyuki; Motoyama, Takeshi; and Hatanaka, Kiyoshi, 4,270,364, Cl. 62-198.000.
Torii, Ken-Ichi; and Shima, Takeshi, 4,271,531, Cl. 455-182.000.

Tolliver, Wilbur E. Concrete pipe reinforcement spacer bar process. 4,270,583, Cl. 140-92.100.

Tolliver, Wilbur E. Flexible pipe joint for non-interengaging pipe sections. 4,270,776, Cl. 285-235.000.

Tomabechi, Masatoshi: *See—*
Shiraiwa, Toshio; Yamaguchi, Hisao; Matsumoto, Shigeaki; Tomabechi, Masatoshi; and Nakajima, Kimio, 4,270,389, Cl. 73-612.000.

Tomari, Yukio: *See—*
Sakano, Hajime; Nakai, Fumio; and Tomari, Yukio, 4,271,230, Cl. 428-315.000.

Tomfohrde, Charles E.: *See—*
Severson, Verne L.; and Tomfohrde, Charles E., 4,271,403, Cl. 340-147.00C.

Tominaga, Hidemitsu: *See—*
Maeda, Hiroshi; Ariga, Nagao; Oikawa, Hiroshi; and Tominaga, Hidemitsu, 4,271,079, Cl. 260-346.300.

Tomisawa, Setsuo: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,271,084, Cl. 260-429.00R.

Tomiyama, Shunsuke: *See—*
Takenouchi, Mutsuo; Tomiyama, Shunsuke; and Ozawa, Takashi, 4,271,435, Cl. 358-213.000.

Tomlinson, Geoffrey E. S., to White-BSA Tools Ltd. Multi-spindle lathes. 4,270,419, Cl. 82-3.000.

Tomlinson, Geoffrey E. S., to White-BSA Tools Ltd. Multi-spindle lathes. 4,270,420, Cl. 82-3.000.

Tomura, Yasushi; Sakuma, Fujio; Suzuki, Seiji; and Shimizu, Masayuki, to Sumitomo Chemical Company, Limited. Process for producing polyethylene. 4,271,280, Cl. 526-65.000.

Tonikian, Dina N.: *See—*
Ragoza, Igor V.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Dina N.; and Tonikian, Robert T., 4,270,368, Cl. 66-13.000.

Tonikian, Robert T.: *See—*
Ragoza, Igor V.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Dina N.; and Tonikian, Robert T., 4,270,368, Cl. 66-13.000.

Toppan Printing Co., Ltd.: *See—*
Ito, Yoshiyashu; Sugiura, Takeo; and Sawada, Yoshikatsu, 4,270,449, Cl. 101-129.000.

Toray Industries, Inc.: *See—*
Setsuda, Tsutomu; Aizawa, Hideyuki; and Kimura, Takeshi, 4,271,318, Cl. 564-468.000.

Torck, Bernard: *See—*
Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, 4,270,929, Cl. 44-56.000.

Torii, Ken-Ichi; and Shima, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Frequency synthesizer. 4,271,531, Cl. 455-182.000.

Torii, Osamu: *See—*
Hashimoto, Yasuyuki; and Torii, Osamu, 4,270,870, Cl. 401-93.000.

Torisawa, Akira: *See—*
Shida, Masaharu; Torisawa, Akira; Ueda, Makoto; Mandai, Masaaki; Sato, Katsuhiko; and Asano, Kazuhiro, 4,271,496, Cl. 368-80.000.

Torr Vacuum Products, Inc.: *See—*
Norman, Arthur E., 4,270,727, Cl. 251-63.400.

Torterotot, Roland M.; and Nasica, Jean R. L. Production of sterile packages. 4,270,965, Cl. 156-244.110.

Toshiba Kikai Kabushiki Kaisha: *See—*
Tsukimoto, Toshiaki, 4,270,567, Cl. 137-493.500.

Toshine, Tatsumi: *See—*
Matsuo, Kohtaro; Kawamura, Satoshi; and Toshine, Tatsumi, 4,271,066, Cl. 260-97.500.

Tourtellotte, Herbert A.: *See—*
Wicks, Ruel E.; and Tourtellotte, Herbert A., 4,270,675, Cl. 222-196.000.

Townsend, Roger, to Redland Roof Tiles Limited. Ridge batten bracket. 4,270,330, Cl. 52-712.000.

Toyo Kogyo Co., Ltd.: *See—*
Harasaki, Hayatsugu; and Imura, Yutaka, 4,270,793, Cl. 296-192.000.
Maeda, Tooru, 4,271,095, Cl. 261-41.00D.

Toyo Seikan Kaisha, Ltd.: *See—*
Kunimoto, Go; and Mori, Fumio, 4,270,665, Cl. 215-347.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Saito, Mitsutaka, 4,270,992, Cl. 204-59.00R.

Toyo Suisan Kaisha, Ltd.: *See—*
Kaneko, Yoshio, 4,271,205, Cl. 426-451.000.

Toyoguchi, Yoshinori; Iijima, Takashi; and Fukuda, Masataro, to Matsushita Electric Industrial Co., Ltd. Active material for positive electrode of battery. 4,271,242, Cl. 429-194.000.

Toyohuku, Takashi: *See—*
Ohtsuka, Toshinori; and Toyohuku, Takashi, 4,271,465, Cl. 364-200.000.

Toyoshima, Shigeru: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,271,084, Cl. 260-429.00R.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Fukuba, Akio; Morishita, Michio; Tanaka, Kenji; Nishi, Toshinobu; and Ouchi, Hideaki, 4,270,347, Cl. 60-276.000.
Ishii, Shinya; Saito, Takaharu; Sugiyama, Masahiko; and Kamo, Takashi, 4,270,691, Cl. 228-194.000.
Kawai, Hisasi; Ito, Toshimitsu; Sanada, Masakatsu; and Iwase, Kazuo, 4,271,469, Cl. 364-431.000.
Nishimura, Yutaka; and Gamano, Kazuyuki, 4,270,625, Cl. 180-291.000.

Trabitzsch, Hans; Frieser, Josef; Koschik, Achim; and Plainer, Hermann, to Rohm GmbH. Stable aqueous solutions of certain vinyl copolymers. 4,271,058, Cl. 260-29.60M.

Trassy, Christian, to Instruments S.A. Apparatus for producing an aerosol jet. 4,271,100, Cl. 261-78.00A.

Trautwein, Wolfgang, to Lockheed Missiles & Space Company, Inc. Buckle proof wear resistant endless traction band. 4,270,811, Cl. 305-11.000.

Travis, James M. Drive axle for electric vehicle. 4,270,622, Cl. 180-65.00C.

Tri Delta Industries, Inc.: *See—*
Meo, Santino D., 4,271,401, Cl. 340-52.00D.

Trieselt, Wolfgang: *See—*
Oppenlaender, Knut; Strickler, Rainer; Perner, Johannes; and Trieselt, Wolfgang, 4,271,031, Cl. 252-156.000.

Trivedi, Bhupendra C.; Grote, Dace; and Mason, Thomas O., to Ashland Oil, Inc. Liquid-liquid extraction of isobutyric acid from aqueous HF solutions thereof. 4,270,983, Cl. 203-43.000.

Trogan, John F., to C. G. Bretting Mfg. Co. Inc. Tuckers on mechanical folding rolls. 4,270,744, Cl. 493-430.000.

Trogdon, Raymond L., to Owens-Illinois, Inc. Method and apparatus for inspecting objects for defects. 4,270,863, Cl. 356-71.000.

Troncoso, Nestor J.: *See—*
Burk, Emmett H., Jr.; Sun, Jui-Yuan; and Troncoso, Nestor J., 4,270,927, Cl. 44-1.0SR.

Trueman, James R.: *See—*
Brierley, John M.; Parsons, John S.; Trueman, James R.; and Jones, Robert A., 4,271,030, Cl. 252-98.000.

Trumpf America, Inc.: *See—*
Herb, Eugen; and Leibinger, Berthold, 4,270,253, Cl. 29-26.00A.

Trutzschler GmbH & Co. KG: *See—*
Beneke, Wolfgang, 4,270,246, Cl. 19-113.000.

TRW Inc.: *See—*
Fisher, Charles K., 4,270,777, Cl. 285-242.000.

Tsang, David L.; and Majewicz, Wlodzimierz I., to United Tire & Rubber Co. Limited. Closure mechanism for tire curing press. 4,270,887, Cl. 425-47.000.

Tsao, Tsun-chiu: *See—*
Rowles, Howard C.; and Tsao, Tsun-chiu, 4,270,940, Cl. 62-28.000.

Tse, Patrick S., to Celanese Corporation. Pill-resistant polyester fabrics. 4,270,913, Cl. 8-115.600.

Tsong, Yun-Yen; Talwar, Gursaran P.; Koide, Samuel; and Segal, Sheldon J., to Population Council, Inc. Beta-hCG preparation and method. 4,271,069, Cl. 260-112.50R.

Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, to Olympus Optical Co., Ltd. Electrophotographic apparatus employing a control assembly for controlling successive duplication of a document. 4,270,860, Cl. 355-14.00R.

Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, to Shionogi & Co., Ltd. Oxazolines. 4,271,295, Cl. 544-182.000.

Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, to Shionogi & Co., Ltd. Oxazolines. 4,271,296, Cl. 544-182.000.

Tsuji, Toshikazu: *See—*
Nanjo, Hirotoshi; and Tsuji, Toshikazu, 4,270,510, Cl. 123-648.000.

Tsukimoto, Toshiaki, to Toshiba Kikai Kabushiki Kaisha. Control valve for use in hydraulic apparatus. 4,270,567, Cl. 137-493.500.

Tuck, Alan D., Jr., to Wilden Pump & Engineering Co. Pump diaphragm. 4,270,441, Cl. 92-102.000.

Tuflex AG: *See—*
Bucheli, Josef, 4,270,434, Cl. 411-21.000.

Tuomi, Sirpa A.: *See—*
Honkanen, Erkki J.; Pippuri, Aino K.; Kairisalo, Pekka J.; Thaler, Heinrich; Koivisto, Maija K.; and Tuomi, Sirpa A., 4,271,300, Cl. 544-291.000.

Turley, John W.: *See—*
Verbickas, Robert C.; and Turley, John W., 4,270,377, Cl. 72-242.000.

Turner, Joseph: *See—*
Chesmer, Alec D.; and Turner, Joseph, 4,270,656, Cl. 198-847.000.

Tusdakoma Kogyo Kabushiki Kaisha: *See—*
Nakanishi, Masakazu, 4,270,579, Cl. 139-370.200.

Twelve West, Inc.: *See—*
McAllister, Charles B., 4,270,556, Cl. 132-89.000.

Twubaki, Toshio: *See—*
Terashima, Isamu; Twubaki, Toshio; and Anzai, Masayasu, 4,270,487, Cl. 118-690.000.

Tyndall, Wayne: *See—*
Hyde, Bruce; and Tyndall, Wayne, 4,270,586, Cl. 144-309.0AC.

U C B Societe Anonyme: *See—*
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,172, Cl. 424-267.000.
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,173, Cl. 424-267.000.

U.S.A. 161 Developments Ltd.: *See—*
Lindberg, John E., 4,270,508, Cl. 123-568.000.

Uchida, Naoya; Seikai, Shigeyuki; Yoshimura, Kozo; and Yamanishi, Toru, to Nippon Telegraph and Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Glass fibers for optical transmission. 4,270,840, Cl. 350-96.340.

Uchiyama, Takashi: *See—*
Suzuki, Ryoichi; Harigaya, Isao; and Uchiyama, Takashi, 4,270,852, Cl. 354-23.00D.

Ueda, Makoto: *See—*
Shida, Masaharu; Torisawa, Akira; Ueda, Makoto; Mandai, Masaaki; Sato, Katsuhiko; and Asano, Kazuhiro, 4,271,496, Cl. 368-80.000.

Ueno, Saburo: *See—*
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,271,151, Cl. 424-177.000.

Uhl, Klaus; Frischkorn, Hans; and Martini, Thomas, to Hoechst Aktiengesellschaft. Colorless formulaticns of optical brighteners from the series of bis-triazinylamino-stilbene-disulfonic acid compounds. 4,271,036, Cl. 252-301.230.

Ulrich, Charles J.: *See—*
Szanto, Elmer G.; and Ulrich, Charles J., 4,270,970, Cl. 156-477.00B.

Ultra-Centrifuge Nederland N.V.: *See—*
Luijten, Waltherus J. Th. H.; and Smid, Joost, 4,270,882, Cl. 415-72.000.

Umann, Walter: *See—*
Heckel, Klaus; Klaffke, Friedemann; Umann, Walter; and Schwarz, Volker, 4,271,218, Cl. 428-36.000.

Umezawa, Kazumi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,270,857, Cl. 355-8.000.
Union Carbide Corporation: *See—*
Kelsey, Donald R.; and Kreeger, Russell L., 4,271,053, Cl. 260-29.2EP.
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Esposito, Edward J.; and Blair, Matthew J. (said Edward J. Esposito assors. to), 4,270,949, Cl. 75-60.000.
United States Filter Corporation: *See—*
Reinauer, Thomas V., 4,270,935, Cl. 55-379.000.
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Air Force: *See—*
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Army: *See—*
Jacobi, John H.; and Larsen, Lawrence E., 4,271,389, Cl. 324-58.50A.
Merritt, James A., 4,270,997, Cl. 204-157.10R.
Plumer, Roy D.; and Olson, Donald N., 4,270,293, Cl. 42-1.00F.
Shreve, James S., 4,271,413, Cl. 343-100.0SA.
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Eklund, James D.; Halter, Joseph M.; Rasmussen, Donald E.; Sullivan, Robert G.; and Moffat, Robert B., 4,270,876, Cl. 405-133.000.
Gall, Robert L., 4,270,469, Cl. 110-245.000.
Jacobs, Eddy L., 4,271,361, Cl. 250-390.000.
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Stillwagon, Roy E., 4,271,369, Cl. 310-178.000.
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Giner, Jose D.; and Cahill, Kathleen J. Catalyst surfaces for the chromous/chromic REDOX couple. 4,270,984, Cl. 204-2.100.
Michaud, Roger B. Urine collection apparatus. 4,270,539, Cl. 128-295.000.
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Baker, Judd O.; O'Brien, Jerome J.; Curtis, Westley F.; and Varney, Frederick M., 4,270,479, Cl. 114-240.00A.
Struessel, David A., 4,270,566, Cl. 137-492.500.
Treasury: *See—*
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U.S. Philips Corporation: *See—*
Bollen, Lambertus J. M.; and Goorissen, Jan, 4,270,960, Cl. 148-175.000.
Broc, Guillaume; and Asseo, Edouard, 4,271,506, Cl. 370-89.000.
Himmelbauer, Erich E.; and Koemans, Joseph M., 4,271,373, Cl. 313-432.000.
Mahdjuri, Faramarz; Asselman, George A. A.; and de Grijs, Johan C., 4,270,520, Cl. 126-433.000.
Martin, Johann, 4,270,261, Cl. 29-527.200.
Meyer, Herbert, 4,270,847, Cl. 350-392.000.
Perilhou, Jean R.; and Coursant, Roger H., 4,270,546, Cl. 128-660.000.
van Deursen, Theodorus H. M., 4,271,530, Cl. 455-182.000.
Vonk, Klaas, 4,270,708, Cl. 242-107.300.
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Wicks, Ruel E.; and Tourtellotte, Herbert A., 4,270,675, Cl. 222-196.000.
Wisner, George R.; and Elkow, Robert M., 4,271,355, Cl. 250-201.000.
Wright, Robert J.; and Hecht, Ralph J., 4,271,005, Cl. 204-298.000.
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Tsang, David L.; and Majewicz, Wlodzimierz I., 4,270,887, Cl. 425-47.000.
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University of Nebraska Regents Hall, The Board of Regents of the: *See—*
Bourne, Richard C., 4,270,518, Cl. 126-422.000.
University Patents, Inc.: *See—*
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Claxton, Gerald L.; and Horn, Darrell C., 4,270,581, Cl. 140-57.000.
Upadek, Horst: *See—*
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Upham, Neil R., to Aeroquip Corporation. Elastomeric instrument clamp. 4,270,717, Cl. 248-27.100.
Upjohn Company, The: *See—*
Sih, John C., 4,271,077, Cl. 260-345.200.
Sih, John C., 4,271,078, Cl. 260-345.200.
Sih, John C., 4,271,292, Cl. 542-429.000.
Sih, John C., 4,271,313, Cl. 560-121.000.
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Greiner, Joachim; and Mager, Albrecht, 4,271,441, Cl. 360-130.330.
Valerio, Robert M. Oil pan for internal combustion engines. 4,270,497, Cl. 123-195.00C.
Vamvakaris, Christos; Neumann, Peter; and Patsch, Manfred, to BASF Aktiengesellschaft. Heterocyclic compounds. 4,271,303, Cl. 546-155.000.
Van Blarcom Closures, Inc.: *See—*
Buono, Caetano, 4,270,664, Cl. 215-216.000.
Vance, Ian A. W.; and Overy, Michael R., to International Standard Electric Corporation. Splitter/combiner network. 4,271,501, Cl. 370-24.000.
Vandenberg, Leonard B. Solar heat collection and transfer system. 4,270,522, Cl. 126-434.000.
Van Den Driessche, Michel, to Thomson-CSF. Circuit for decoding chrominance signals in the Secam television system and a television receiver comprising this circuit. 4,271,427, Cl. 358-40.000.
van der Burg, Willem J., to Akzona Incorporated. 2,3,3a,12b-Tetrahydro-1H-dibenzo[2,3;6,7]thiepino[4,5-c]pyrroles and pharmaceutical use thereof. 4,271,177, Cl. 424-274.000.
van der Burg, Willem J., to Akzona Incorporated. 1,2,3,3a,8,12b-Hexahydro-dibenzo[b,f]pyrrolo[3,4-d]azepines and pharmaceutical use thereof. 4,271,178, Cl. 424-274.000.
van der Burg, Willem J., to Akzona Incorporated. 1,2,3,3a,8,12b-Hexahydro-dibenzo[1,2;5,6]cyclohepta[3,4-C]pyrroles and pharmaceutical use thereof. 4,271,179, Cl. 424-274.000.
Van der Gucht, Karel: *See—*
Fink, Helmuth; and Van der Gucht, Karel, 4,271,478, Cl. 364-580.000.
van der Lely, Cornelis. Soil cultivating devices. 4,270,615, Cl. 172-49.000.
van der Lely, Cornelis. Articulated tractor powered by tandem engines. 4,270,621, Cl. 180-54.00C.
Van Der Maas, Robert E. Heat storing fireplace. 4,270,512, Cl. 126-121.000.
van Deursen, Theodorus H. M., to U.S. Philips Corporation. Receiver having a frequency synthesizing circuit. 4,271,530, Cl. 455-182.000.
Van Gompel, James, to Brammall, Inc. Roll straightening tool. 4,270,379, Cl. 72-392.000.
van Heel, Joannes M., to Stichting Bouwcentrum. Heat storage apparatus and heat exchanger element for use therein. 4,270,523, Cl. 126-435.000.
Van Leeuwen, Paul, to Hunter Douglas International N.V. Panel carrier and panel construction incorporating such carrier. 4,270,327, Cl. 52-488.000.
van Lieshout, Marinus W., to Skol Brouwerijen N.V. Process for supplying beverages. 4,270,584, Cl. 141-11.000.
Van Loo, William C.: *See—*
Christensen, Neal T.; Van Loo, William C.; Werner, Robert H.; Wetzel, Joseph A.; and Zeitler, Carl, Jr., 4,271,468, Cl. 364-200.000.
Van Meter, Arch, to Ryder International Corporation. Valve for filter device. 4,271,020, Cl. 210-133.00Q.
Vanover, Everett R. Prop means for facilitating the fueling of vehicles. 4,270,784, Cl. 292-338.000.
Varney, Frederick M.: *See—*
Baker, Judd O.; O'Brien, Jerome J.; Curtis, Westley F.; and Varney, Frederick M., 4,270,479, Cl. 114-240.00A.
Vasiljuk, Petr J.: *See—*
Ragoza, Igor V.; Begunov, Petr M.; Vasiljuk, Petr J.; Tonikian, Dina N.; and Tonikian, Robert T., 4,270,368, Cl. 66-13.000.
Vatsky, Joel, to Foster Wheeler Energy Corporation. Swirl producer. 4,270,895, Cl. 431-183.000.
Vaughan, David E. W.; Lussier, Roger J.; and Magee, John S., Jr., to W. R. Grace & Co. Pillared interlayered clay products. 4,271,043, Cl. 252-455.00R.
VDO Adolf Schindling AG: *See—*
Kalk, Heinz, 4,270,371, Cl. 70-264.000.
VEB Gaskombinat Schwarze Pumpe: *See—*
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Velasco, Gonzalo: *See—*
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Velo-Bind, Inc.: *See—*
Szanto, Elmer G.; and Ulrich, Charles J., 4,270,970, Cl. 156-477.00B.
Venkataperumal, Rama R.; and Mericle, Gerald E., to United States of America, Energy. Combined hydraulic and regenerative braking system. 4,270,806, Cl. 303-3.000.
Verbickas, Robert C.; and Turley, John W., to T. Sendzimir, Inc. Eighteen high rolling mill. 4,270,377, Cl. 72-242.000.
Verdesca, Joseph T. Cabinet and shelf wall mounting apparatus. 4,270,821, Cl. 312-245.000.
Vernia, Peter: *See—*
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Versatool, Inc.: *See—*
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Verschure, Pietrus: *See—*
Arnaudeau, Marcel; and Verschure, Pietrus, 4,270,611, Cl. 166-344.000.
Viarengo, Henry L.: *See—*
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Vietzke, Horst: *See—*
Borner, Paul; Isensee, Hans-Jorg; and Vietzke, Horst, 4,271,127, Cl. 422-159.000.
Vinals, Joaquin F.: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,271,324, Cl. 568-824.000.
Vink, Walter; Spooner, Leonard; and Mackay, Donald A. M., to Life Savers, Inc. Method for controlling weight of sugar-containing solid shapes and product. 4,270,956, Cl. 127-29.000.
Vink, Walter: *See—*
Cherukuri, Subraman R.; Vink, Walter; Friello, Dominick R.; and Mackay, Donald A. M., 4,271,199, Cl. 426-5.000.
Vinot, Daniel, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull. Apparatus enabling the transfer of data blocks of variable lengths between two memoı y interfaces of different widths. 4,271,480, Cl. 364-900.000.
Vlasovskaya, Olga N.: *See—*
Makarova, Serafima B.; Leikin, Jury A.; Smirnov, Anatoly V.; Semeny, Valery Y.; Pakhomova, Eleonora M.; Korelskaya, Galina I.; Polikarpova, Antonin P.; Ilinsky, Andrei A.; Vlasovskaya, Olga N.; and Tikhonova, Ljudmila A., 4,271,276, Cl. 525-340.000.
Vock, Manfred H.: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,271,324, Cl. 568-824.000.
Voest-Alpine Aktiengesellschaft: *See—*
Bachner, Ernst, 4,270,593, Cl. 164-82.000.
Voges, Heinz W., to Chemische Werke Huls Aktiengesellschaft. Process for the preparation of araliphatic dihydroperoxides. 4,271,321, Cl. 568-569.000.
Vogt, Wilhelm; and Glaser, Hermann, to Hoechst Aktiengesellschaft. Production of ethylene. 4,271,008, Cl. 208-48.00R.
von der Decken, Jan; and Max, Heinz, to Dornier GmbH. Method and apparatus for rolling control of airplanes by means of spoilers. 4,270,712, Cl. 244-90.00A.
Vonk, Klaas, to U.S. Philips Corporation. Cable winder. 4,270,708, Cl. 242-107.300.
Vonlanthen, Benno; and Walther, Robert, to R. Berchtold AG. Key and lock system. 4,270,372, Cl. 70-406.000.
von Meyer, William C.: *See—*
Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., 4,271,308, Cl. 548-262.000.
W. F. Altenpohl, Inc.: *See—*
Altenpohl, William F.; and Altenpohl, Paul J., 4,270,336, Cl. 53-493.000.
W. R. Grace & Co.: *See—*
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W. S. Coswell Limited: *See—*
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WABCO Fahrzeugbremsen GmbH: *See—*
Ruhnau, Gerhard; Gudat, Wolfgang; Lindemann, Klaus; and Saba, Manfred, 4,270,810, Cl. 303-106.000.
Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Kramer, Hans; and Kirschner, Helmuth, 4,270,316, Cl. 51-283.00R.
Wacks, Harvey H.; Izu, Masatsugu; and Sarrach, Donald J., to Energy Conversion Devices, Inc. Imaging film of bismuth or bismuth alloy. 4,271,257, Cl. 430-276.000.
Wada, Minoru: *See—*
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Wagensonner, Eduard: *See—*
Stemme, Otto; Staudacher, Frank; Lermann, Peter; and Wagensonner, Eduard, 4,270,854, Cl. 354-76.000.
Wagner, Douglas A., to General Motors Corporation. Gear drive for gas turbine engine. 4,270,408, Cl. 74-661.000.
Wagner, Heinz: *See—*
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Wakasugi, Kazuyuki: *See—*
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Walbro Far East, Inc.: *See—*
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Wallberg, Kurt-Ake. Method for installing an adjustable flow restricting valve member in a tubular pipe, and a valve device for utilization of the method. 4,270,559, Cl. 137-15.000.
Walter, Carl: *See—*
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Walter, Lothar: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; and Kunkel, Heinrich, 4,270,815, Cl. 308-213.000.
Walters, L. Kirk; Judd, Richard K.; and Atkins, Terrance J., to General Motors Corporation. Malleable stop for engine control element. 4,271,094, Cl. 261-39.00B.
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Wands, Jack R.; and Zurawski, Vincent R., Jr., to Massachusetts General Hospital, The. Process for producing antibodies to hepatitis virus and cell lines therefor. 4,271,145, Cl. 424-85.000.
Ward, Brooke A., to Intrusion Microwave Electronics Limited. Infrared surveillance systems using multi-faceted mirror. 4,271,360, Cl. 250-353.000.
Ward, John S., to Eli Lilly and Company. N-(1,3,4-Thiadiazol-2-yl)benzamides. 4,271,166, Cl. 424-263.000.
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Warner, Percival E.; Smith, Paul; and Cadle, Terence M., to Brico Engineering Limited. Sintered metal articles and process for their manufacture. 4,271,239, Cl. 428-547.000.
Warren, Joseph R.: *See—*
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Warren, Joseph V. Folding chair. 4,270,795, Cl. 297-45.000.
Warzawa, Wolfgang: *See—*
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Watanabe, Katsuyuki; Hayashi, Tadatoshi; Hayashi, Hiroaki, deceased; by Hayashi, Atsuko, heir; by Hayashi, Yuko, heir; Tatano, Toshio; and Shmizu, Yoshiaki, to Kyowa Hakko Kogyo Kabushiki Kaisha. Method of determining cholinesterase activity and choline derivatives for use in the method. 4,271,310, Cl. 560-71.000.
Watanabe, Kazuo: *See—*
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Watanabe, Kenkichi, to Laurel Bank Machine Co., Ltd. Incorrectness detecting device for detecting coin piling condition in piling cylinder of coin packaging machine. 4,270,557, Cl. 133-8.00D.
Watanabe, Kojiro, to Nippon Electric Co., Ltd. Adaptive diversity receiver for digital communications. 4,271,525, Cl. 375-14.000.
Watanabe, Masazumi: *See—*
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Watanabe, Takashi: *See—*
Nakagawa, Keizo; Yamano, Katsushi; Watanabe, Takashi; Yamamoto, Kunio; and Inomata, Shigeo, 4,270,953, Cl. 106-16.000.
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Watariguchi, Kiyosumi, to Tamura Kaken Co., Ltd. Photopolymerizable ink compositions. 4,271,258, Cl. 430-284.000.
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Watson, Walter E., III: *See—*
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Watts, John R. Locking device for removable frame structures. 4,270,779, Cl. 292-175.000.
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Webinger, George, to Champion International Corporation. Air diffuser. 4,270,692, Cl. 229-11.000.
Wegner, Klaus: *See—*
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Wehling, Bernhard: *See—*
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Weil, Manfred; and Rothenberger, Gunter, to Rothenberg GmbH & Co., Firma. Combination pipe-cutter and deburring tool. 4,270,269, Cl. 30-102.000.
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Wenghoefer, Johann; Messier, Dennis; and Thompson, James, to American Hoechst Corporation. Azo dyestuffs containing $-SO_2CH_2CH_2$. OSO_3H and $-N(CH_2CH_2OSO_3H)_2$ groups. 4,271,072, Cl. 260-207.300.

Werner, Robert H.: *See*—
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Wernet, William F.: *See*—
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West Agro-Chemical, Inc.: *See*—
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West Electric Company, Ltd.: *See*—
Hatada, Kotaro; Higuchi, Masaru; and Iwata, Hiroshi, 4,270,853, Cl. 354-76.000.

West, Gary A.: *See*—
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West, Harold H., to Cablecraft, Inc. Push-pull cable motor truck remote gear shift system and two-dimensional motion conversion and transmission apparatus therein. 4,270,403, Cl. 74-473.00R.

Westerman, Glenn S.: *See*—
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Western Electric Company, Inc.: *See*—
Breeze, Marvin M., Jr.; and Wood, Virgil W., 4,270,237, Cl. 10-155.00R.
Sandmore, Donald K., 4,270,424, Cl. 83-167.000.
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Westinghouse Brake & Signal Co.: *See*—
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Andrews, Harry N.; Eglinton, Edmund C.; Gulaskey, Joseph W.; Balog, Leonard J.; and Beer, Robert W., 4,270,258, Cl. 29-157.400.
Boyce, Walter A., 4,271,109, Cl. 264-63.000.
Castner, Raymond P., 4,271,471, Cl. 364-474.000.
Cross, Michael A., 4,270,839, Cl. 350-96.150.
Kehrman, Robert F.; Farstad, Arnold J.; Gibbons, Michael G.; and Swigert, David L., 4,271,407, Cl. 340-690.000.
Meyer, Thomas N., 4,271,341, Cl. 200-148.00A.
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Wetzel, Joseph A.: *See*—
Christensen, Neal T.; Van Loo, William C.; Werner, Robert H.; Wetzel, Joseph A.; and Zeitler, Carl, Jr., 4,271,468, Cl. 364-200.000.

White, Alan C.: *See*—
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White-BSA Tools Ltd.: *See*—
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Tomlinson, Geoffrey E. S., 4,270,420, Cl. 82-3.000.

White, Jackie L.: *See*—
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White, Pat M.: *See*—
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White, Robert L.: *See*—
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Whitfield, Dwight: *See*—
Sorensen, Ronald L.; and Whitfield, Dwight, 4,270,783, Cl. 292-336.300.

Whiting Corporation: *See*—
Bennett, Richard C., 4,270,675, Cl. 159-27.00A.

Wickmann-Werke AG: *See*—
Adam, Manfred, 4,270,836, Cl. 339-213.00R.

Wicks, Ruel E.; and Tourtellotte, Herbert A., to United Technologies Corporation. Powder feed apparatus. 4,270,675, Cl. 222-196.000.

Widdowson, Richard E.; Connolly, James B.; Schlotterbeck, Earl S.; and Livesay, J. D., to General Motors Corporation. Universal internal tube accumulator. 4,270,934, Cl. 55-316.000.

Wiggins, Noel D., to Caterpillar Tractor Co. Bearing positioning retainer. 4,270,813, Cl. 308-23.000.

Wiland, Lawrence. Method and apparatus for carving and contouring dental restorations. 4,270,902, Cl. 433-144.000.

Wilden Pump & Engineering Co.: *See*—
Tuck, Alan D., Jr., 4,270,441, Cl. 92-102.000.

Wilkerson, James W. Capo. 4,270,432, Cl. 84-318.000.

Will, Heinz-Dieter; Dommes, Werner; and Polzl, Hans-Werner, to Audi NSU Auto Union AG. Turbocharged engine and method of operating same. 4,270,356, Cl. 60-602.000.

Willard, Robert E.: *See*—
Menot, Robert; Willard, Robert E.; Griem, Paul D.; and Devine, Guy E., 4,271,505, Cl. 370-85.000.

Willems, Victor: *See*—
Janssens, Theo; and Willems, Victor, 4,270,688, Cl. 228-5.100.

Willhide, Joseph: *See*—
Willhide, Joseph W.; and Viarengo, Henry L., 4,270,755, Cl. 273-313.000.

Willhide, Joseph W.; and Viarengo, Henry L., to Willhide, Joseph. Strategy based electronic combat game. 4,270,755, Cl. 273-313.000.

Wm. R. Stewart & Sons (Hacklemakers) Ltd.: *See*—
Stewart, David B.; Stewart, William R.; and Dickinson, John M. C., 4,270,245, Cl. 19-85.000.

Williams, David J.: *See*—
Kelley, Donald J.; Williams, David J.; and Slovenkai, Stephen V., 4,271,281, Cl. 526-80.000.

Williams, Gerald B., to British Steel Corporation. Determining the dimensions of workpieces. 4,271,477, Cl. 364-563.000.

Williams, Glenn L.; and Reilly, Edward J., to Gould Inc. Thermal array protection apparatus. 4,271,414, Cl. 346-76.0PH.

Williams, Robert D.: *See*—
Bright, David R.; and Williams, Robert D., 4,271,174, Cl. 424-272.000.

Williams, W. Ray: *See*—
Saunders, Robert C.; Au, Dean T.; Williams, W. Ray; and Zurek, Donald, 4,271,472, Cl. 364-481.000.

Willis, Brian J.; and Dittrick, John W., to Fritzsche Dodge & Olcott, Inc. Novel norcamphanyl-substituted pyrans, method for their synthesis and use thereof in perfumery. 4,271,046, Cl. 252-522.00R.

Willmund, Wolf-Dieter; and Wagner, Heinz, to Henkel Kommanditgesellschaft auf Aktien. Acid galvanic nickel baths containing N-(2,3-dihydroxypropyl)-pyridinium sulfates. 4,270,987, Cl. 204-49.000.

Wilson, Albert H., to Thomas & Betts Corporation. Jumper socket. 4,270,829, Cl. 339-96.000.

Wilson, Reginald D. Bed wetting tattler. 4,271,406, Cl. 340-604.000.

Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 2,6,6-Trimethyl-α-(iso)propenyl-1,3-cyclohexadiene-1-methanols. 4,271,324, Cl. 568-824.000.

Winberg, Robert F., to General Motors Corporation. Materials and method for preventing high temperature seize between metal parts. 4,270,348, Cl. 60-323.000.

Windmoller & Holscher: *See*—
Schmidt, Horst, 4,270,677, Cl. 222-561.000.

Wine, Charles M., to RCA Corporation. Receiver with a channel swapping apparatus. 4,271,532, Cl. 455-186.000.

Winicov, Murray W.; and Oberlander, Michael, to West Agro-Chemical, Inc. Germicidal iodine compositions with enhanced iodine stability. 4,271,149, Cl. 424-150.000.

Wirth, Gallo & Co.: *See*—
Saner, Kaspar; Wirth, Johannes; and Gallo, Mario, 4,270,384, Cl. 73-862.590.

Wirth, Johannes: *See*—
Saner, Kaspar; Wirth, Johannes; and Gallo, Mario, 4,270,384, Cl. 73-862.590.

Wisner, George R.; and Elkow, Robert M., to United Technologies Corporation. Method for mitigating $2\pi N$ ambiguity in an adaptive optics control system. 4,271,355, Cl. 250-201.000.

Wittmann, Dieter: *See*—
Deschler, Gerhard; Gebhardt, Hans; and Wittmann, Dieter, 4,270,407, Cl. 74-569.000.

Witzel, Frank: *See*—
Puglia, Wayne J.; Witzel, Frank; and Mackay, Donald A. M., 4,271,142, Cl. 424-14.000.

Wohlfarter, Alois: *See*—
Bergloff, Dag; Wohlfarter, Alois; Heissenberger, Otto; Muhlhauser, Martin; and Petschauer, Franz, 4,270,254, Cl. 29-148.40D.

Wolber, Robert; and Maurer, Roland, to Gebruder Junghans GmbH. Electric contact for a battery-operated instrument. 4,270,834, Cl. 339-147.00R.

Wolf, Klaus-Ulrich: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ulrich; Hell, Insa; and Hempel, Reinhard, 4,271,193, Cl. 424-324.000.

Wolfe, Henry S., to American Clearwater Corp. Articles incorporating air vents. 4,270,227, Cl. 2-87.000.

Wolfe, Hunter. Variable width tool attachment for use with a vehicle. 4,270,339, Cl. 56-95.000.

Wong, Ching-Ping, to Western Electric Company, Inc. Encapsulated electronic devices and encapsulating compositions having crown ethers. 4,271,425, Cl. 357-72.000.

Woo, Edmund P., to Dow Chemical Company, The. Novel polyamic acid polymers and polyimide derivatives thereof. 4,271,288, Cl. 528-353.000.

Wood, Virgil W.: *See*—
Breeze, Marvin M., Jr.; and Wood, Virgil W., 4,270,237, Cl. 10-155.00R.

Woodard, Harrold R., to International Business Machines Corporation. Multiple stack roll-wave sheet separator apparatus. 4,270,745, Cl. 271-9.000.

Woods, Jack L. Anodic oxidation of aluminum and aluminum alloys with a lignin electrolyte solution. 4,270,991, Cl. 204-58.000.

Woodward, Donald W.: *See*—
Rowles, Howard C.; and Woodward, Donald W., 4,270,939, Cl. 62-22.000.

Workman, Nolan M.: *See*—
Hendrickson, James D.; White, Pat M.; Davis, Odie R. S.; Workman, Nolan M.; Baker, Eugene E.; and Szarka, David D., 4,270,608, Cl. 166-278.000.

Wossner, Felix, to Fichtel & Sachs AG. Shock absorber for vehicles. 4,270,635, Cl. 188-322.000.
Wray, William R., to Polaroid Corporation. Electronic gain and noise control for recording of analog information. 4,271,439, Cl. 360-65.000.
Wright, Robert J.; and Hecht, Ralph J., to United Technologies Corporation. Workpiece support apparatus for use with cathode sputtering devices. 4,271,005, Cl. 204-298.000.
Wuest, Hans: *See—*
Buchi, George H.; and Wuest, Hans, 4,271,048, Cl. 252-522.00R.
Wuest, Willi; Just, Guenther; and Peters, Bernd W., to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler. Preparation of finely-divided, water-insoluble silicate cation-exchangers with a narrow particle size spectra. 4,271,135, Cl. 423-329.000.
Wulf, Helmut: *See—*
Niemann, Klaus; Wulf, Helmut; and Hauck, Peter, 4,270,405, Cl. 74-499.000.
Wurtman, Richard J.; and Lown, Bernard, to Massachusetts Institute of Technology. Process for treatment and prevention of ventricular fibrillation. 4,271,192, Cl. 424-319.000.
Wyler, Siegfried: *See—*
Lohmann, Dieter; and Wyler, Siegfried, 4,271,074, Cl. 260-326.260.
Xanthopoulos, Piritheos G.; and Stewart, Lloyd W., to Artzan Corporation. Construction tiles for making toy wall panels. 4,270,303, Cl. 46-25.000.
Xerox Corporation: *See—*
Gaudioso, Stephen L., 4,271,248, Cl. 430-39.000.
Hamlin, Thomas J., 4,270,746, Cl. 271-98.000.
Yagi, Makoto: *See—*
Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, 4,271,453, Cl. 361-248.000.
Yajima, Tadashi; Yagi, Makoto; Katoh, Masayoshi; Ishii, Takashi; Maruizumi, Haruki; and Nagaoka, Tadahiko, to Nissan Motor Company, Limited; and Japan Aviation Electronics Industry, Limited. Igniter with coupling structure. 4,271,453, Cl. 361-248.000.
Yamada, Carl S. Noisemaker for skateboard. 4,270,764, Cl. 280-87.04A.
Yamada, Eiji: *See—*
Ohtsuki, Nobuo; Yamada, Eiji; and Utaka, Tadashi, 4,271,353, Cl. 250-276.000.
Yamadaya, Shoko: *See—*
Ishikawa, Toshio; Niwa, Shuichi; Yamadaya, Shoko; and Orito, Yoshio, 4,271,327, Cl. 585-440.000.
Yamaguchi, Hisao: *See—*
Shiraiwa, Toshio; Yamaguchi, Hisao; Matsumoto, Shigeaki; Tomabechi, Masatoshi; and Nakajima, Kimio, 4,270,389, Cl. 73-612.000.
Yamaguchi, Takashi; Shinjo, Goro; and Okuno, Yoshitoshi, to Sumitomo Chemical Company, Limited. Synergistic mixture of three pyrethroid series insecticidal compounds. 4,271,180, Cl. 424-274.000.
Yamaichi Electric Mfg. Co., Ltd.: *See—*
Takahashi, Toru, 4,270,831, Cl. 339-99.00R.
Yamamoto, Fumiichiro: *See—*
Furusawa, Mitsuru; Yamamoto, Fumiichiro; and Yoshinaga, Makoto, 4,270,838, Cl. 350-81.000.
Yamamoto, Kunio: *See—*
Nakagawa, Keizo; Yamano, Katsushi; Watanabe, Takashi; Yamamoto, Kunio; and Inomata, Shigeo, 4,270,953, Cl. 106-16.000.
Yamamoto, Mitsuru; Arai, Jun; Isogawa, Takao; and Hasebe, Isamu, to Panafacom Limited. Direct memory access control system with byte/word control of data bus. 4,271,466, Cl. 364-200.000.
Yamanishi, Toru: *See—*
Uchida, Naoya; Seikai, Shigeyuki; Yoshimura, Kozo; and Yamanishi, Toru, 4,270,840, Cl. 350-96.340.
Yamano, Katsushi: *See—*
Nakagawa, Keizo; Yamano, Katsushi; Watanabe, Takashi; Yamamoto, Kunio; and Inomata, Shigeo, 4,270,953, Cl. 106-16.000.
Yantis, June E.: *See—*
Hempenius, Walter L.; and Yantis, June E., 4,271,200, Cl. 426-27.000.
Yardy, Raymond, to Discovision Associates. Apparatus for correcting for temperature-induced tracking errors in a system for recovering information from a recording disc. 4,271,334, Cl. 369-41.000.
Yates, Lance W. Apparatus for ice fishing. 4,270,297, Cl. 43-4.000.
Ykman, Pierre: *See—*
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,172, Cl. 424-267.000.
Rodriguez, Ludovic; Leclercq, Jacques; Ykman, Pierre; and Cossement, Eric, 4,271,173, Cl. 424-267.000.
Yokomichi, Isao: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,270,948, Cl. 71-100.000.
Yoldas, Bulent E., to Westinghouse Electric Corp. Method of forming transmissive, porous metal oxide optical layer of a vitreous substrate. 4,271,210, Cl. 427-169.000.
Yoshida, Chizuko: *See—*
Horiuchi, Masao; Miyake, Makiko; and Yoshida, Chizuko, 4,271,344, Cl. 219-10.55E.
Yoshida, Isamu: *See—*
Kondo, Koichi; Yoshida, Isamu; and Kobayashi, Takashi, 4,270,923, Cl. 23-230.00B.
Yoshida Kogyo K. K.: *See—*
Nishiyama, Hissai, 4,270,578, Cl. 139-92.000.
Yoshida Kogyo K.K.: *See—*
Akashi, Shunji, 4,270,248, Cl. 24-205.11R.
Ishida, Kinji, 4,270,322, Cl. 52-98.000.
Nakada, Kiyoshi, 4,270,580, Cl. 139-431.000.
Yoshikawa, Syuich: *See—*
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,270,472, Cl. 112-158.00E.
Yoshikumi, Chikao: *See—*
Hotta, Tetsuya; Enomoto, Satoru; Yoshikumi, Chikao; Ohara, Minoru; and Ueno, Saburo, 4,271,151, Cl. 424-177.000.
Yoshimura, Kazunori: *See—*
Ito, Katsuo; Murata, Bunjiro; and Yoshimura, Kazunori, 4,270,394, Cl. 74-10.00R.
Yoshimura, Kozo: *See—*
Uchida, Naoya; Seikai, Shigeyuki; Yoshimura, Kozo; and Yamanishi, Toru, 4,270,840, Cl. 350-96.340.
Yoshimura, Noriaki: *See—*
Tokitoh, Yasuo; Yoshimura, Noriaki; and Tamura, Masuhiko, 4,271,320, Cl. 568-426.000.
Yoshinaga, Makoto: *See—*
Furusawa, Mitsuru; Yamamoto, Fumiichiro; and Yoshinaga, Makoto, 4,270,838, Cl. 350-81.000.
Yoshioka, Mitsuru: *See—*
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,295, Cl. 544-182.000.
Tsuji, Teruji; Yoshioka, Mitsuru; Uyeo, Shoichiro; Hamashima, Yoshio; Kikkawa, Ikuo; and Nagata, Wataru, 4,271,296, Cl. 544-182.000.
Yoshioka, Takahiro: *See—*
Suzuki, Hideto; Hayashi, Shunichi; and Yoshioka, Takahiro, 4,271,061, Cl. 260-37.0EP.
Yoshizawa, Tamotu: *See—*
Murakoshi, Makoto; and Yoshizawa, Tamotu, 4,270,404, Cl. 74-479.000.
Young, Alastair J., to Automotive Products Limited. Vehicle fluid pressure braking systems and lever mechanisms for use therein. 4,270,807, Cl. 303-22.00R.
Youngerman, Eugene G.: *See—*
Stover, Carole S.; Compton, Leslie E.; and Youngerman, Eugene G., 4,271,009, Cl. 208-254.00R.
Yu, Mason K., to General Motors Corporation. Hybrid dual shaft gas turbine with accumulator. 4,270,344, Cl. 60-39.16R.
Yukawa, Hideaki; Osumi, Kazuoki; Nara, Terukatsu; and Takayama, Yoshihiro, to Mitsubishi Petrochemical Co., Ltd. Preparation of L-trytophan by fermentation. 4,271,267, Cl. 435-108.000.
Zafferri, Roberto; Schneiter, Ali; and Besson, Rene, to Ebauches S.A. Watch. 4,271,498, Cl. 368-250.000.
Zahnradfabrik Friedrich-Shafen Aktiengesellschaft: *See—*
Leber, Fritz, 4,270,647, Cl. 192-113.00B.
Zakhryamin, Anatoly D.: *See—*
Glushko, Mikhail F.; Skalatsky, Viktor K.; Zakhryamin, Anatoly D.; and Shamrai, Gennady F., 4,270,341, Cl. 57-215.000.
Zapf, Karl: *See—*
Hoffmann, Kurt; and Zapf, Karl, 4,271,461, Cl. 363-60.000.
Zaugg, Hans: *See—*
Strassle, Rudolf; and Zaugg, Hans, 4,271,122, Cl. 422-61.000.
Zaugg, Paul, to BBC Brown, Boveri & Co. Ltd. Method of operating a gas turbine plant. 4,270,342, Cl. 60-39.040.
Zebra Co., Ltd.: *See—*
Sekiguchi, Kazuhiko, 4,270,869, Cl. 401-30.000.
Zech, Herbert: *See—*
Rossman, Axel; and Zech, Herbert, 4,271,112, Cl. 264-86.000.
Zeitler, Carl, Jr.: *See—*
Christensen, Neal T.; Van Loo, William C.; Werner, Robert H.; Wetzel, Joseph A.; and Zeitler, Carl, Jr., 4,271,468, Cl. 364-200.000.
Zeitner, Alfred: *See—*
Knobl, Alois; Zeitner, Alfred; Krockow, Helmut; and Schmaus, Hermann, 4,271,454, Cl. 361-274.000.
Zenith Radio Corporation: *See—*
Strammello, Peter, Jr., 4,271,529, Cl. 455-180.000.
Zeria-Shinyaku Kogyo Kabushiki Kaisha: *See—*
Sasaki, Koji; and Harada, Yasukazu, 4,271,150, Cl. 424-177.000.
Zernig, Ernst; and Pittasch, Willi, to Richard Heinze GmbH & Co. KG. Hinge cup for furniture hinges. 4,270,240, Cl. 16-148.000.
Zeugner, Horst: *See—*
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ulrich; Heil, Insa; and Hempel, Reinhard, 4,271,193, Cl. 424-324.000.
Zimmerer, Arthur L., deceased: *See—*
Siekmeier, David A.; Andersen, Glen L.; Zimmerer, Arthur L., deceased; First National Bank & Trust Co., joint executor; Zimmerer, Bernadette, joint executor; and Zimmerer, William P., 4,270,699, Cl. 239-184.000.
Zimmerer, Bernadette, joint executor: *See—*
Siekmeier, David A.; Andersen, Glen L.; Zimmerer, Arthur L., deceased; First National Bank & Trust Co., joint executor; Zimmerer, Bernadette, joint executor; and Zimmerer, William P., 4,270,699, Cl. 239-184.000.
Zimmerer, William P.: *See—*
Siekmeier, David A.; Andersen, Glen L.; Zimmerer, Arthur L., deceased; First National Bank & Trust Co., joint executor; Zimmerer, Bernadette, joint executor; and Zimmerer, William P., 4,270,699, Cl. 239-184.000.
Zimmerschied, Wilford J.; and Meyer, Delbert H., to Standard Oil Company (Indiana). Suppression of diglycol ether ester in chromium

(III) catalyzed ethylene oxide reaction with aromatic carboxylic acids. 4,271,312, Cl. 560-93.000.

Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., to Bio-Energy Systems, Inc. Tube mat heat exchanger. 4,270,596, Cl. 165-1.000.

Zint, Frederick J. Portable male urinal with drain means. 4,270,231, Cl. 4-144.100.

Zurawski, Vincent R., Jr.: *See*—
Wands, Jack R.; and Zurawski, Vincent R., Jr., 4,271,145, Cl. 424-85.000.

Zurbuchen, Jacques; and Leutenegger, Willi, to CIBA-GEIGY Corporation. Process for the dyeing of fibre material. 4,270,236, Cl. 8-159.000.

Zurek, Donald: *See*—
Saunders, Robert C.; Au, Dean T.; Williams, W. Ray; and Zurek, Donald, 4,271,472, Cl. 364-481.000.

Zurrer, August: *See*—
Marfurt, Hans-Rudolf; and Zurrer, August, 4,271,028, Cl. 210-727.000.

Zwettler, Frank J., Jr.: *See*—
Brandl, Michael C.; Kataoka, David T.; Khanna, Jagdish C.; and Zwettler, Frank J., Jr., 4,270,623, Cl. 180-69.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF JUNE, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Christiaens Societe Anonyme: *See*—
Delarge, Jacques E.; Lapiere, Charles L.; and Georges, Andre H., Re. 30,633, Cl. 424-263.000.

Barnes, Derek, to MacMillan Bloedel Limited. Products of converted lignocellulosic materials. Re. 30,636, Cl. 428-294.000.

Breysse, Jacques; and Roget, Jean, to Rhone Poulenc, S.A. Separation apparatus. Re. 30,632, Cl. 210-236.000.

Dawson, Lindsay G., to Rolls-Royce Limited. Gas turbine engine. Re. 30,629, Cl. 60-682.000.

Delarge, Jacques E.; Lapiere, Charles L.; and Georges, Andre H., to A. Christiaens Societe Anonyme. 3-Lower alkylcarbamylsulfonamido-4-phenylaminopyridines, n-oxides, derivatives thereof and pharmaceutical compositions containing same. Re. 30,633, Cl. 424-263.000.

General Atomic Company: *See*—
Morse, David C.; and Vrable, Daniel L., Re. 30,630, Cl. 62-332.000.

Georges, Andre H.: *See*—
Delarge, Jacques E.; Lapiere, Charles L.; and Georges, Andre H., Re. 30,633, Cl. 424-263.000.

Henry, Arthur C., to Shell Oil Company. Benzyl oxime ethers. Re. 30,634, Cl. 424-327.000.

Hercules Incorporated: *See*—
Ruckdeschel, Charles B., Jr., Re. 30,631, Cl. 101-415.100.

Kuppers, Dieter; Lydtin, Hans; and Rehder, Ludwig, to U.S. Philips Corporation. Method of producing internally coated glass tubes for the drawing of fibre optic light conductors. Re. 30,635, Cl. 427-38.000.

Lapiere, Charles L.: *See*—
Delarge, Jacques E.; Lapiere, Charles L.; and Georges, Andre H., Re. 30,633, Cl. 424-263.000.

Lydtin, Hans: *See*—
Kuppers, Dieter; Lydtin, Hans; and Rehder, Ludwig, Re. 30,635, Cl. 427-38.000.

MacMillan Bloedel Limited: *See*—
Barnes, Derek, Re. 30,636, Cl. 428-294.000.

Morse, David C.; and Vrable, Daniel L., to General Atomic Company. Power plant secondary coolant circuit. Re. 30,630, Cl. 62-332.000.

Rehder, Ludwig: *See*—
Kuppers, Dieter; Lydtin, Hans; and Rehder, Ludwig, Re. 30,635, Cl. 427-38.000.

Rhone Poulenc, S.A.: *See*—
Breysse, Jacques; and Roget, Jean, Re. 30,632, Cl. 210-236.000.

Roget, Jean: *See*—
Breysse, Jacques; and Roget, Jean, Re. 30,632, Cl. 210-236.000.

Rolls-Royce Limited: *See*—
Dawson, Lindsay G., Re. 30,629, Cl. 60-682.000.

Ruckdeschel, Charles B., Jr., to Hercules Incorporated. Saddle lock-up for tab-less flexible printing plates. Re. 30,631, Cl. 101-415.100.

Shell Oil Company: *See*—
Henry, Arthur C., Re. 30,634, Cl. 424-327.000.

U.S. Philips Corporation: *See*—
Kuppers, Dieter; Lydtin, Hans; and Rehder, Ludwig, Re. 30,635, Cl. 427-38.000.

Vrable, Daniel L.: *See*—
Morse, David C.; and Vrable, Daniel L., Re. 30,630, Cl. 62-332.000.

LIST OF DESIGN PATENTEES

Allen, James L., to G.S.B. Rail Ltd. Modular electronic equipment case. 259,418, 6-2-81, Cl. D13-41.000.

Amaro, Frances; and Amaro, Max. Drapery work table. 259,378, 6-2-81, Cl. D6-179.000.

Amaro, Max: *See*—
Amaro, Frances; and Amaro, Max, 259,378, Cl. D6-179.000.

Atlas Copco AB: *See*—
Elmessaar, Heino; Lundberg, Ronald J.; and Zernell, Stig R., 259,392, Cl. D8-68.000.

Baker, Arleigh B.: *See*—
Root, James A.; and Baker, Arleigh B., 259,423, Cl. D14-95.000.

Baldwin, Leonard. Mute for a brass musical instrument or the like. 259,426, 6-2-81, Cl. D17-13.000.

Bell, Ted A.; and Lehner, Daniel F., to Pretty Products, Inc. Automobile floor mat. 259,416, 6-2-81, Cl. D12-203.000.

Bell, Ted A.; and Lehner, Daniel F., to Pretty Products, Inc. Automobile floor mat. 259,417, 6-2-81, Cl. D12-203.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald M.; and McGarvey, John N., 259,420, Cl. D14-60.000.

Belzona Molecular Metalife Limited: *See*—
Jones, Ian B., 259,404, Cl. D9-370.000.

Boehm, Lawrence O. Cane. 259,371, 6-2-81, Cl. D3-7.000.

Boeing Company, The: *See*—
Miller, Douglas S.; and Nielson, David J., 259,411, Cl. D12-341.000.

Brown, Richard G., to Null Manufacturing Corporation. Seat. 259,373, 6-2-81, Cl. D6-71.000.

Broyhill Furniture Industries, Inc.: *See*—
Smith, Melbourne F., Jr., 259,377, Cl. D6-179.000.

Carroll, James C.; Johns, Victor D.; and Johnson, Lewis T., to Phillips Petroleum Company. Tote box for fruit or the like. 259,400, 6-2-81, Cl. D99-44.000.

Carter, Ronald D., to Post Office, The. Telephone instrument. 259,419, 6-2-81, Cl. D14-53.000.

Cepin, George. Golf shoe tool. 259,372, 6-2-81, Cl. D4-06.000.

Champion International Corporation: *See*—
Manning, James F., 259,401, Cl. D9-432.000.

Clorox Company, The: *See*—
Drummond, Archie G., 259,405, Cl. D9-376.000.

Crowe, Douglas M., to Smith & Stone Limited. Soap dish. 259,374, 6-2-81, Cl. D6-90.000.

Dart Industries Inc.: *See*—
Painter, David L.; and Zinkgraf, Robert C., 259,382, Cl. D7-21.000.

Dickinson, Robert J.; and Wagner, James L. Combined self-righting sinker and lure support with trailing legs. 259,436, 6-2-81, Cl. D22-30.000.

di Rosa, Gaetano, to F.A.T.A. -Fabbrica Apparecchi di Sollevamento e Trasporto Ed Affini S.p.A. Self-propelled trolley for suspended monorail conveyers. 259,410, 6-2-81, Cl. D12-60.000.

Doman, Donald W., to Kohler Co. Food preparation sink. 259,439, 6-2-81, Cl. D23-62.000.

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Drummond, Archie G., to Clorox Company, The. Bottle. 259,405, 6-2-81, Cl. D9-376.000.

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Shiffman, Jerome, to Rocket Jewelry Box, Inc. Jewelry case. 259,399, 6-2-81, Cl. D9-423.000.

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Bennett, Cecilia L. D. Miniature rose plant. 4,730, 6-2-81, Cl. 9.000.
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Van den Berg, Cornelis P.; and Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 4,733, 6-2-81, Cl. 68.000.
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Williams, Ernest D. Miniature rose plant. 4,729, 6-2-81, Cl. 7.000.

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ICI Americas Inc.: *See*—
Kuehn, Erich, T100,701, Cl. 428-422.800.
Kuehn, Erich, to ICI Americas Inc. In-mold coating compositions containing non-functional liquid copolymers and free isocyanate containing compounds. T100,701, 6-2-81, Cl. 428-422.800.

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	4,270,469
346	4,270,470

CLASS 111

6	4,270,471

CLASS 112

158 E	4,270,472
	4,270,473
276	4,270,474

CLASS 113

120 K	4,270,475

CLASS 114

40	4,270,476
104	4,270,477
218	4,270,478
240 A	4,270,479
296	4,270,480

CLASS 116

28.1	4,270,481
209	4,270,482

CLASS 118

46	4,270,483
305	4,270,484
648	4,270,485
679	4,270,486
690	4,270,487

CLASS 119

4	4,270,488
51 R	4,270,489
61	4,270,490
109	4,270,491
118	4,270,492

CLASS 122

7 R	4,270,493

CLASS 123

41.35	4,270,494
54 B	4,270,495
90.51	4,270,496
195 C	4,270,497
276	4,270,498
293	4,270,499
308	4,270,500
350	4,270,501
357	4,270,502
438	4,270,503
520	4,270,504
522	4,270,505
523	4,270,506
	4,270,507
568	4,270,508
647	4,270,509
648	4,270,510

CLASS 124

81	4,270,511

CLASS 126

121	4,270,512
	4,270,513
140	4,270,514
164	4,270,515
417	4,270,516
422	4,270,517
	4,270,518
430	4,270,519
433	4,270,520
	4,270,521
434	4,270,522
435	4,270,523
443	4,270,524

CLASS 127

29	4,270,956

CLASS 128

4	4,270,525
67	4,270,526
87 A	4,270,528
87 R	4,270,527
200.26	4,270,529
204.25	4,270,530
207.14	4,270,531
213 R	4,270,532
214 D	4,270,534
214 F	4,270,533
214.4	4,270,535
218 A	4,270,537
218 N	4,270,536
282	4,270,538
295	4,270,539
305.5	4,270,540
344	4,270,541
350 R	4,270,542
639	4,270,543
640	4,270,544
653	4,270,545
660	4,270,546
671	4,270,547
743	4,270,548
784	4,270,549

CLASS 130

27 H	4,270,551
27 T	4,270,550

CLASS 131

290	4,270,552
291	4,270,553

CLASS 132

40	4,270,554
	4,270,555
89	4,270,556

CLASS 133

8 D	4,270,557

CLASS 134

2	4,270,957
6	4,270,958

CLASS 136

249	4,271,328

CLASS 137

2	4,270,558
15	4,270,559
68 R	4,270,560
107	4,270,561
115	4,270,562
116.5	4,270,563
240	4,270,564
268	4,270,565
492.5	4,270,566
493.5	4,270,567
498	4,270,568
514.7	4,270,569
597	4,270,570
614.11	4,270,571
615	4,270,572
624.11	4,270,574
624.2	4,270,573
625.69	4,270,575
888	4,270,576

CLASS 138

39	4,270,577

CLASS 139

92	4,270,578
370.2	4,270,579
431	4,270,580

CLASS 140

57 4,270,581
71 R 4,270,582
92.1 4,270,583

CLASS 141

11 4,270,584
37 4,270,585

CLASS 144

309 AC 4,270,586

CLASS 145

30 R 4,270,587
35 R 4,270,588

CLASS 148

153 4,270,959
175 4,270,960

CLASS 150

0.5 4,270,589
1.6 4,270,590

CLASS 152

158 4,270,592

CLASS 156

51 4,270,961
180 4,270,962
201 4,270,963
228 4,270,964
244.11 4,270,965
251 4,270,966
299 4,270,967
361 4,270,968
401 4,270,605
473 4,270,969
477 B 4,270,970
510 4,270,971
605 4,270,972
4,270,973

CLASS 159

16 S 4,270,974
27 A 4,270,975

CLASS 162

26 4,270,976
168 R 4,270,977
199 4,270,978

CLASS 164

82 4,270,593
127 4,270,594
415 4,270,595

CLASS 165

1 4,270,596
27 4,270,597
61 4,270,598
104.16 4,270,599
104.31 4,270,600
154 4,270,601
167 4,270,602
185 4,270,603
4,270,604

CLASS 166

181 4,270,606
273 4,270,607
278 4,270,608
303 4,270,609
317 4,270,610
344 4,270,611

CLASS 169

45 4,270,612
61 4,270,613

CLASS 171

63 4,270,614

CLASS 172

49 4,270,615
811 4,270,616
821 4,270,617

CLASS 174

84 R 4,271,329
4,271,330

CLASS 175

57 4,270,618
61 4,270,619
322 4,270,620

CLASS 176

78 4,270,979

CLASS 179

1 SH 4,271,331
1.5 A 4,271,332
90 K 4,271,333

CLASS 180

54 C 4,270,621
65 C 4,270,622
69 R 4,270,623
287 4,270,624
291 4,270,625

CLASS 181

113 4,270,626
131 4,270,627

CLASS 187

6 4,270,628
9 E 4,270,629
9 R 4,270,630

CLASS 188

72.9 4,270,631
79.5 GC 4,270,633
79.5 P 4,270,632
196 M 4,270,634
322 4,270,635

CLASS 192

3.31 4,270,636
41 S 4,270,637
45.1 4,270,638
53 F 4,270,639
70.14 4,270,640
82 T 4,270,641
84 T 4,270,642
103 C 4,270,643
106.1 4,270,645
106.2 4,270,644
111 A 4,270,646
113 B 4,270,647

CLASS 194

1 C 4,270,648

CLASS 198

341 4,270,649
388 4,270,650
456 4,270,651
486 4,270,652
554 4,270,653
729 4,270,654
774 4,270,655
847 4,270,656

CLASS 200

24 4,271,336
51.09 4,271,337
61.71 4,271,338
144 B 4,271,340
144 C 4,271,339
148 A 4,271,341
157 4,271,342
304 4,271,343

CLASS 201

28 4,270,980

CLASS 202

172 4,270,981
241 4,270,982

CLASS 203

43 4,270,983

CLASS 204

2.1 4,270,984
15 4,270,985
48 4,270,986
49 4,270,987
50 R 4,270,988
4,270,989
55 R 4,270,990
58 4,270,991
59 R 4,270,992
67 4,270,993
78 4,270,994
79 4,270,995
98 4,270,996
157.1 R 4,270,997
158 HA 4,270,998
192 E 4,270,999
195 B 4,271,001
195 M 4,271,002
195 S 4,271,000
265 4,271,003
266 4,271,004
298 4,271,005

CLASS 206

386 4,270,657
439 4,270,658
538 4,270,659

CLASS 208

40 4,271,006
48 R 4,271,007
4,271,008
254 R 4,271,009

CLASS 209

211 4,271,010
236 4,271,011
653 4,271,012

CLASS 210

86 4,271,014
94 4,271,015
4,271,016
95 4,271,017
107 4,271,018
108 4,271,019
133 Q 4,271,020
198.2 4,271,022
198.3 4,271,021
236 Re.30,632
321.3 4,271,023
474 4,271,024
487 4,271,025
605 4,271,026
609 4,271,027
617 4,271,013
727 4,271,028

CLASS 211

13 4,270,660
49 D 4,270,661
74 4,270,662

CLASS 212

222 4,270,663

CLASS 215

216 4,270,664
347 4,270,665
364 4,270,666

CLASS 219

10.55 E 4,271,344
10.79 4,271,345
76.14 4,271,346
121 ED 4,271,348
121 L 4,271,347
283 4,271,349
549 4,271,350

CLASS 220

86 R 4,270,667
324 4,270,668

CLASS 221

13 4,270,669
211 4,270,670

CLASS 222

58 4,270,671
95 4,270,672
129.3 4,270,673
146 HE 4,270,674
196 4,270,675
485 4,270,676
561 4,270,677

CLASS 224

181 4,270,679
193 4,270,680
321 4,270,681

CLASS 225

1 4,270,682
103 4,270,683

CLASS 226

162 4,270,684
194 4,270,685
195 4,270,686

CLASS 227

113 4,270,687

CLASS 228

5.1 4,270,688
152 4,270,689
173 F 4,270,690
194 4,270,691

CLASS 229

11 4,270,692

CLASS 235

375 4,271,351
4,271,352

CLASS 236

46 F 4,270,693
49 4,270,694

CLASS 237

12.1 4,270,695

CLASS 239

38 4,270,696
99 4,270,697
171 4,270,698
184 4,270,699
231 4,270,700
288.5 4,270,701
455 4,270,702

CLASS 241

18 4,270,703
122 4,270,704
183 4,270,705

CLASS 242

55.2 4,270,706
56.9 4,270,707
107.3 4,270,708
107.7 4,270,709
118.11 4,270,710

CLASS 244

17.17 4,270,711
90 A 4,270,712
106 4,270,713
145 4,270,714

CLASS 246

5 4,270,715
182 B 4,270,716

CLASS 248

27.1 4,270,717
188.3 4,270,718
235 4,270,719
269 4,270,720
285 4,270,721
310 4,270,722
421 4,270,723
534 4,270,724

CLASS 250

201 4,271,355
211 K 4,271,354
262 4,271,356
276 4,271,353
287 4,271,357
338 4,271,358
347 4,271,359
353 4,271,360
390 4,271,361
496 4,271,362
504 R 4,271,363
551 4,271,365

CLASS 251

6 4,270,725
30 4,270,726
63.4 4,270,727
143 4,270,728
144 4,270,729
214 4,270,730
292 4,270,849
309 4,270,731
310 4,270,732

CLASS 252

70 4,271,029
98 4,271,030
156 4,271,031
174.19 4,271,032
188.3 R 4,271,033
301.1 W 4,271,034
301.17 4,271,035
301.23 4,271,036
359 R 4,271,037
428 4,271,038
435 4,271,039
437 4,271,040
438 4,271,041
439 4,271,042
455 R 4,271,043
462 4,271,044
511 4,271,045
522 R 4,271,046
4,271,047
4,271,048

CLASS 254

93 R 4,270,733
134.3 R 4,270,734

CLASS 256

10 4,270,735
12 4,270,736
48 4,270,737

CLASS 260

4 R 4,271,049
5 4,271,050
22 M 4,271,051
23.7 N 4,271,052
29.2 EP 4,271,053
29.3 4,271,054
29.6 AN 4,271,056
29.6 M 4,271,057
4,271,058
29.6 TA 4,271,055
31.2 T 4,271,059
33.6 A 4,271,060
37 EP 4,271,061
39 P 4,271,062
40 R 4,271,063
4,271,064
4,271,065
97.5 4,271,066
112 R 4,271,067
112.5 R 4,271,068
4,271,069
123.7 4,271,070
157 4,271,071
207.3 4,271,072
315 4,271,073
326.26 4,271,074
343.21 4,271,076
343.4 4,271,075
345.2 4,271,077
4,271,078
346.11 4,271,080
4,271,081
346.3 4,271,079
347.2 4,271,082
396 R 4,271,083
429 R 4,271,084
4,271,085
453 AB 4,271,087
465.6 4,271,088
4,271,089
550 4,271,090

CLASS 261

30 4,271,092
34 R 4,271,093
39 B 4,271,094
41 D 4,271,095
44 G 4,271,096
64 D 4,271,097
66 4,271,098
76 4,271,099
78 A 4,271,100

CLASS 264

0.5 4,271,101
4,271,102
1 4,271,103
1.5 4,271,104
26 4,271,105
40.5 4,271,106
51 4,271,107
4,271,108
63 4,271,109
67 4,271,110
71 4,271,111
86 4,271,112
112 4,271,113
114 4,271,114
117 4,271,115
221 4,271,116
275 4,271,117
333 4,271,118

CLASS 266

99 4,270,738
156 4,270,739
157 4,270,740

CLASS 269

17 4,270,741

CLASS 270

37 4,270,742
58 4,270,743

CLASS 271

9 4,270,745
98 4,270,746
179 4,270,747

CLASS 272

56.5 R 4,270,748
96 4,270,749
136 4,270,750

CLASS 273

34 R 4,270,751
73 A 4,270,752
186 A 4,270,753
273 4,270,754
313 4,270,755
326 4,270,756
411 4,270,757

CLASS 277

1 4,270,759
3 4,270,760
12 4,270,761
59 4,270,762

CLASS 279

123 4,270,763

CLASS 280

87.04 A 4,270,764
137 4,270,765
234 4,270,766
477 4,270,767
610 4,270,768
615 4,270,769
624 4,270,770
707 4,270,771

CLASS 283

1 A 4,270,772
34 4,270,773
62 4,270,774

CLASS 285

24 4,270,775
235 4,270,776
242 4,270,777
305 4,270,778

CLASS 292

175 4,270,779
202 4,270,780
251.5 4,270,781
288 4,270,782
336.3 4,270,783
338 4,270,784

CLASS 293

1 4,270,785
121 4,270,787

CLASS 294

55 4,270,788
63 A 4,270,789
169 4,270,678

CLASS 296

37.16 4,270,790
93 4,270,792
171 4,270,791
192 4,270,793

CLASS 297

14 4,270,794
45 4,270,795
69 4,270,796
300 4,270,797
417 4,270,798
440 4,270,799

CLASS 298

3 4,270,786

CLASS 299

1 4,270,800
4,270,801
5 4,270,802
76 4,270,803

CLASS 300

16 4,270,804

CLASS 301

37 TP 4,270,805

CLASS 303

3 4,270,806
22 R 4,270,807
92 4,270,808
4,270,809
106 4,270,810

CLASS 305

11 4,270,811

CLASS 307

355 4,271,364
591 4,271,366

CLASS 308

8.2 4,270,812
23 4,270,813
160 4,270,814
213 4,270,815

CLASS 310

13 4,271,367
42 4,271,368
178 4,271,369
266 4,271,370
316 4,271,371

CLASS 312

3 4,270,816
15 4,270,817
38 4,270,818
116 4,270,819
242 4,270,820
245 4,270,821
265 4,270,822

CLASS 313

330 4,271,372
432 4,271,373
449 4,271,374

CLASS 315

241 P 4,271,375
4,271,376
366 4,271,377

CLASS 316

19 4,270,823

CLASS 318

10 4,271,378
77 4,271,379
245 4,271,380
282 4,271,381
318 4,271,382
375 4,271,383
685 4,271,384
722 4,271,385
729 4,271,386

CLASS 323

241 4,271,387

CLASS 324

51 4,271,388
58.5 A 4,271,389
74 4,271,390
103 P 4,271,391
115 4,271,392
240 4,271,393

CLASS 330

258 4,271,394

CLASS 331

94.5 C 4,271,396
4,271,397
94.5 L 4,271,395

CLASS 333

28 T 4,271,398
219 4,271,399

CLASS 337

380 4,271,400

CLASS 339

15 4,270,824
47 R 4,270,825
75 MP 4,270,826
95 B 4,270,827
95 R 4,270,828
96 4,270,829
99 R 4,270,830
4,270,831
105 4,270,832
121 4,270,833
147 R 4,270,834
198 GA 4,270,835
213 R 4,270,836

CLASS 340

52 D 4,271,401
52 F 4,271,402
147 C 4,271,403
365 S 4,271,404
512 4,271,405
604 4,271,406
690 4,271,407
702 4,271,408
703 4,271,409
765 4,271,410

CLASS 343

5 DD 4,271,411
5 FT 4,271,412
100 SA 4,271,413

CLASS 346

76 PH 4,271,414
108 4,271,415
140 R 4,271,416
154 4,271,417

CLASS 350

54 4,270,837
81 4,270,838
96.15 4,270,839
96.34 4,270,840
294 4,270,844
299 4,270,845
336 4,270,846
374 4,270,841
392 4,270,847
427 4,270,848
452 4,270,842
480 4,270,843

CLASS 353

27 R 4,270,850

CLASS 354

21 4,270,851
23 D 4,270,852
76 4,270,853
4,270,854
124 4,270,855

CLASS 355

3 R 4,270,856
8 4,270,857
4,270,858
10 4,270,859
14 R 4,270,860
38 4,270,861

CLASS 356

5 4,270,862
71 4,270,863
301 4,270,864

CLASS 357

23 4,271,418
24 4,271,419
30 4,271,420
41 4,271,421
42 4,271,422
55 4,271,423
67 4,271,424
72 4,271,425
74 4,271,426

CLASS 358

40 4,271,427
54 4,271,428
4,271,429
102 4,271,430
140 4,271,431
190 4,271,432
191.1 4,271,433
193.1 4,271,434
213 4,271,435
296 4,271,436

CLASS 360

9 4,271,437
32 4,271,438
65 4,271,439
92 4,271,440
130.33 4,271,441
131 4,271,442

CLASS 361

19 4,271,443
48 4,271,444
56 4,271,445
4,271,446
93 4,271,447
4,271,448
4,271,449
94 4,271,450
155 4,271,451
213 4,271,452
231 4,271,453
248 4,271,454
274 4,271,455
331

CLASS 362

66 4,271,456
104 4,271,457
236 4,271,458
346 4,271,459

CLASS 363

49 4,271,460
60 4,271,461
84 4,271,462
126 4,271,463

CLASS 364

200 4,271,464
4,271,465
4,271,466
4,271,467
4,271,468
431 4,271,469
466 4,271,470
474 4,271,471
481 4,271,472
494 4,271,473
500 4,271,474
506 4,271,475
515 4,271,476
563 4,271,477
580 4,271,478
900 4,271,479
4,271,480
4,271,481
4,271,482
4,271,483
4,271,484

CLASS 365

16 4,271,485
45 4,271,486
189 4,271,487
230 4,271,488

CLASS 367

122 4,271,490
136 4,271,491

CLASS 368

10 4,271,492
28 4,271,493
34 4,271,494
75 4,271,495
80 4,271,496
82 4,271,497
250 4,271,498

CLASS 369

38 4,271,489
41 4,271,334
136 4,271,335
170 4,270,758

CLASS 370

7 4,271,499
23 4,271,500
24 4,271,501
62 4,271,502
74 4,271,503
76 4,271,504
85 4,271,505
89 4,271,506
94 4,271,507
106 4,271,508
110 4,271,509
4,271,510

CLASS 371

8 4,271,511
21 4,271,512
22 4,271,513
4,271,514
25 4,271,515
4,271,516
37 4,271,517
4,271,518
38 4,271,519
42 4,271,520
51 4,271,521
57 4,271,522
4,271,523

CLASS 375

1 4,271,524
14 4,271,525
17 4,271,526
39 4,271,527

CLASS 400

63 4,270,865
117 4,270,866
207 4,270,867
320 4,270,868

CLASS 401

30 4,270,869
93 4,270,870

CLASS 403

29 4,270,871
170 4,270,872

CLASS 404

10 4,270,873

CLASS 405

63 4,270,874
129 4,270,875
133 4,270,876
198 4,270,877

CLASS 409

143 4,270,878

CLASS 411

21 4,270,434
112 4,270,591

CLASS 414

35 4,270,879
391 4,270,880
398 4,270,881

CLASS 415

72 4,270,882

CLASS 416

97 A 4,270,883

CLASS 417

15 4,270,884
279 4,270,885
462 4,270,886

CLASS 422

50 4,271,119
53 4,271,120
56 4,271,121
61 4,271,122
64 4,271,123
68 4,271,124
86 4,271,125
143 4,271,126
159 4,271,127
189 4,271,128
246 4,271,129

CLASS 423

118 4,271,130
179.5 4,271,131
223 4,271,132
230 4,271,133
238 4,271,134
329 4,271,135
362 4,271,136
395 4,271,137
462 4,271,138

CLASS 424

1 4,271,139
4,271,140
4,271,141
14 4,271,142
78 4,271,143
4,271,144
85 4,271,145
89 4,271,146
92 4,271,147
106 4,271,148
150 4,271,149
177 4,271,150
4,271,151
4,271,152
180 4,271,153
195 4,271,154
200 4,271,155
246 4,271,156
4,271,157
248.5 4,271,158
248.51 4,271,159
248.54 4,271,160
250 4,271,161
4,271,162
4,271,163
251 4,271,164
263 Re.30,633
4,271,166
4,271,167
4,271,168
4,271,169
4,271,170
266 4,271,171
267 4,271,172
4,271,173
272 4,271,174
273 R 4,271,175
4,271,176
274 4,271,177
4,271,178
4,271,179
4,271,180
276 4,271,181
283 4,271,182
285 4,271,183
4,271,184
4,271,185
304 4,271,186
309 4,271,187
4,271,188
315 4,271,189
316 4,271,190
317 4,271,191
319 4,271,192
324 4,271,193
326 4,271,194
327 Re.30,634
330 4,271,195
358 4,271,196

CLASS 425

47 4,270,887
66 4,270,888
115 4,270,889
150 4,270,890
296 4,270,891
388 4,270,892
415 4,270,893

CLASS 426

3 4,271,197
4,271,198
5 4,271,199
27 4,271,200
40 4,271,201
96 4,271,202
243 4,271,203
259 4,271,204
451 4,271,205
572 4,271,206

CLASS 427

6 4,271,207
28 4,271,208
38 Re.30,635
58 4,271,209
169 4,271,210
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D3—	7	259,371		85	259,384		370	259,404	D12—	60	259,410		68	259,422			259,435
D4—	06	259,372		94	259,385		376	259,405		83	259,412		95	259,423		30	259,436
D6—	71	259,373		108	259,386		420	259,396		157	259,413	D15—	30	259,424	D23—	2	259,437
	90	259,374		154	259,387		423	259,398		167	259,414		34	259,425		35	259,438
	157	259,375		175	259,388			259,399		187	259,415	D17—	13	259,426		62	259,439
	168	259,376		194	259,389		432	259,401		203	259,416	D19—	92	259,428	D24—	9	259,441
	179	259,377		202	259,390			259,402			259,417	D21—	35	259,430		56	259,440
		259,378	D8—	14	259,391		438	259,403		341	259,411		37	259,429		99	259,442
	191	259,379		68	259,392	D10—	46	259,406	D13—	41	259,418		219	259,431	D25—	77	259,443
		259,380		388	259,393		81	259,407	D14—	53	259,419	D22—	7	259,432	D28—	56	259,444
	200	259,381		394	259,394		125	259,408		60	259,420			259,433	D99—	44	259,400
D7—	21	259,382		402	259,395												

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